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IRON TRADE REVIEW

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CLEVELAND, O., APRIL 19, 1928

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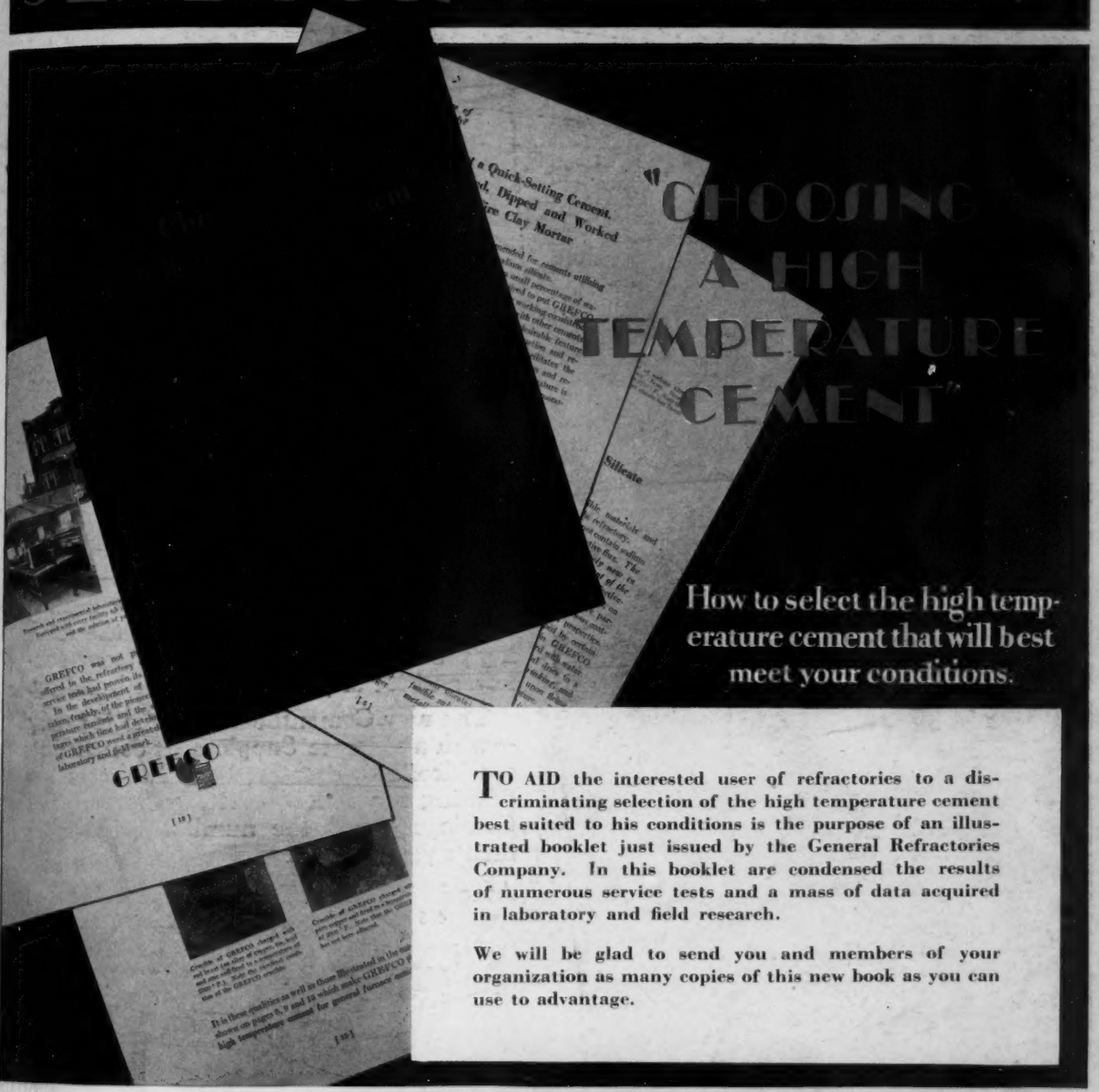
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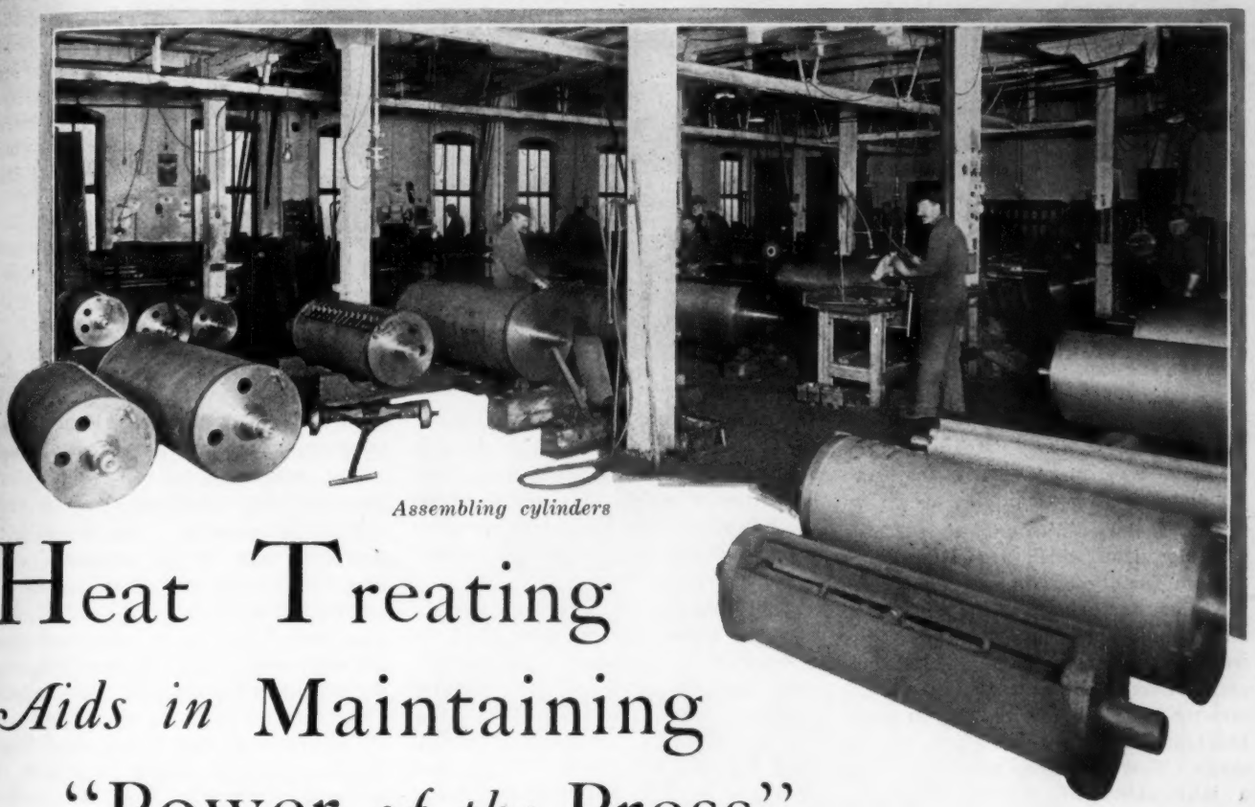


Assembling cylinders

Heat Treating *Aids in* Maintaining "Power *of the* Press"

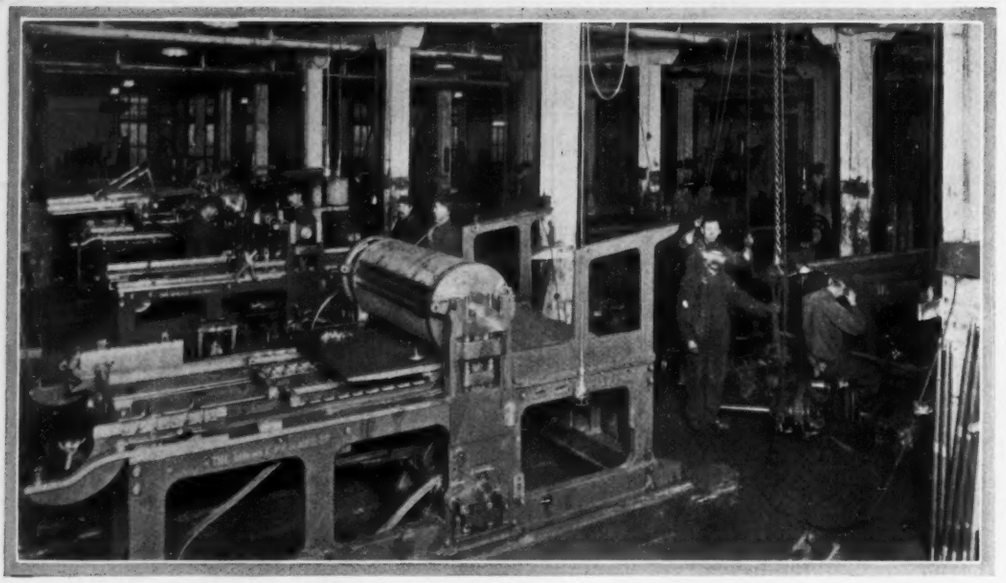
Work on Huge Printing Machines, That Seldom Wear Out, Is Under Close Production Control—25,000 Parts Used in One Plant

By J. B. Nealey

THE thread of the romance of printing, starting in the Dark Ages, is picked out in bold relief in the pattern of our lives today. The rise of civilizations, the development of the arts and sciences, are all due to its influence. It has also given birth to giant industries not the least of which is the manufacture of printing machinery. One of the largest makers of printing presses in the world, the Miehle Printing Press & Mfg. Co., Chicago, beginning about 35 years ago, with a marked improvement over existing methods, has developed a nearly perfect printing machine and which is known as the standard press. This company makes about 43 different presses including flat bed, two color flat bed, perfecting flat bed, rotary, job, offset, rotogravure, power plate, and cutting and creasing presses. It maintains an engineering staff for increasing the efficiency of its manufacturing methods as well as one for the development of newer and better presses. The latest product of this staff is the Miehle vertical which is rapidly working a revolution in job press work, though it is only about four years old. It combines all the advantages

The author is identified with the American Gas association, New York.

NO BETTER example of steel's contribution to the advancement of civilization can be found than the part it plays in modern printing. All of the machined and wearing parts of the small and large printing presses are made of steel. And no more important application of steel treating can be pointed to than its use in making printing presses durable, so that they withstand the hardest usage, day-in, day-out, year after year. It may interest the reader of this article to know that IRON TRADE REVIEW *is printed on Miehle presses, the construction of which is described.*



STRAIGHT-LINE production methods are followed in manufacturing printing presses. Here the workmen are seen erecting single-color flat bed presses.

of the most improved type of platen job press with those offered by the cylinder type and is very fast and completely automatic in its operation.

The factory site comprises three city blocks on which are situated six modern factory buildings which house the manufacturing, assembling, pull down, and shipping departments as well as engineering and general offices. These facilities take care of the making and stocking the 25,000 parts necessary for the production of the many different presses produced. Such a multiplicity of greatly diversified operations and stages of operation, as are here required, calls for a production control of the highest order. This control centers around perpetual inventories, excellent blueprints, and standard practice instructions. These standard practice instructions cover every operation and consequently run well over 100,000 in the aggregate.

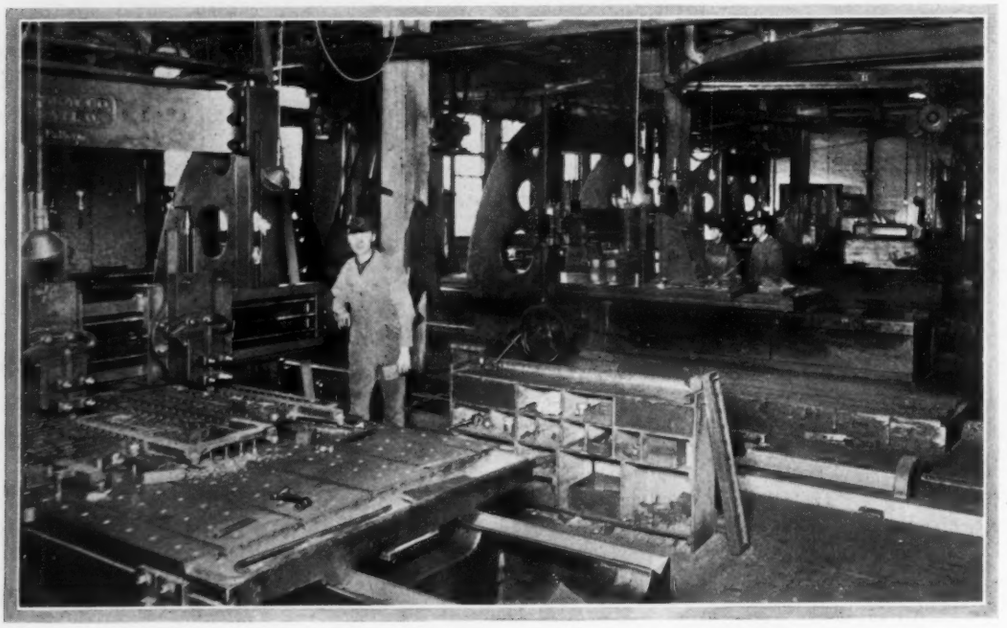
The tools, dies, jigs and fixtures are kept in storage adjacent to the departments which they serve. Files of blueprints and standard practice instruction sheets also are maintained in each department.

Thus when an order for a certain part is issued to the shop by the factory office, all tools, prints, instructions, fixtures and gages are instantly available when the material arrives. The assembling of the various essentials for the work does not depend upon the operator but is accomplished by a general purpose man in each department, following a schedule laid out by the foreman who in turn is governed by the scheduling of the factory office.

The plant is completely departmentalized under such heads as receiving and stores; blacksmith; planer; milling; lathe; chucking lathe; heat treating; small and large drill; punch press; grinding; polishing and plating; assembly; erecting and shipping.

The blacksmith department is equipped with power hammers with dies for reproducing special parts including press rollers up to 8 feet long and 6 inches in diameter. Special furnaces, six in number, are used for heating the stock for these rollers. These furnaces are cylindrical in shape, with a steel casing and brick lining, about 12 inches long and 12 inches in diameter. Heat is supplied from two burners to each furnace so located as to produce a swirling flame. Air is supplied at from four to five pounds pressure and the gas is inspirated.

The planer department is completely equipped for finishing castings such as bed plates, side frames and



ACCURACY in milling operations is essential in the manufacture of printing presses. This is a view in the planer department of one of the world's largest press-building plants.

the like. It has batteries of immense planers and milling machines capable of taking work up to 96 inches wide, 66 inches high and 25 feet long.

Machining of the rollers, shafts and cylinders is done in the lathe department which contains lathes with from 16-inch to 54-inch swings. Shafts and rollers are subject to numerous straightenings after various operations on the many special straightening machines. Final finish on parts of such nature is usually accomplished in the grinding department. Gear blanks and cylinder bearings up to 42 inches in diameter are turned out in rows of chucking lathes, some of which are semiautomatic in operation.

The gear cutting section includes batteries of hobbers, shapers, bevel gear planers, automatic gear cutters and cam mills and several testing tables the use of which insures accuracy. The milling department has every kind of milling machine made and in the drill departments one sees batteries of drill presses, automatic, semiautomatic, and hand, some of which will drill 14 holes in one operation. Rows of automatic screw machines and a few hand screw machines, turn out different parts as wanted, while the plating and polishing rooms are complete with standard equipment for nickel plating and pol-

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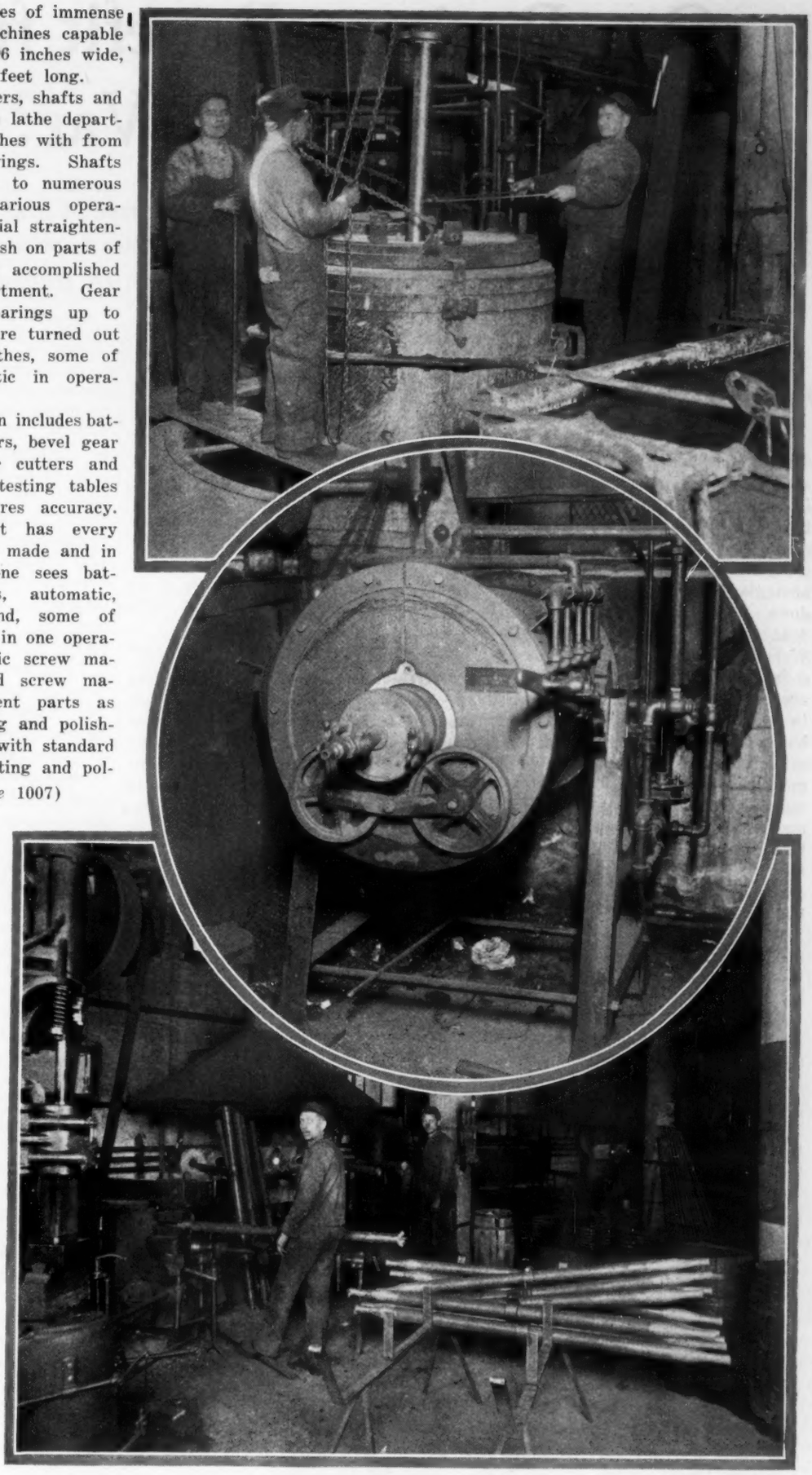


SHAFTS used in printing presses are case hardened, as shown in the upper illustration. In the center is a gas-fired rotary carburizing machine and below is a forging press, using a gas-fired forge.

Can Business Benefit from Principles of War?

Will Fundamental Rules of Combat Serve Manufacturers in Their Struggle with Competition? Strategy of Napoleon and Foch Has Application in Industry

By Robert E. Kinkead

THE growth of power of an organization in a competitive field as a result of continued success is usually very rapid. Demoralization of the defeated organizations is nearly as complete as demoralization of defeated armies. Nothing succeeds like success, in either war or competition. The final stages of the struggle find the combatants settled down into deadlock similar to the deadlock on the western front in the World war in 1917.

In the commercial deadlock, however, we find the leader of the field in possession of the most attractive business, but with a complete circle of relatively small competitors, each getting a particular class of the remaining business. The small competitors continually nibble at the desirable business and the large factor in the field finds himself continually being dragged down by the price policy of his flock of small competitors.

This near equilibrium of forces tends to level off the peak of profits the dominating factor enjoyed at the height of his career. He is confronted with a situation in which if he increases his volume of business, by taking business which his small competitors are now getting, his profits decrease due to the fact that the small competitors are getting business which it would cost him heavily to take away from them.

On the other hand, if he permits the small competitors to share in his profitable business his profits decrease. Thus, if his volume of sales goes up, down, or stands still, he stands to suffer a declining profit. In the meantime, the combative strength of his organization is on the wane because there is nothing worth while to combat.

Viewing the struggle from the other side of the trenches, we find that the conditions are not very encouraging, although there always is the possibility of increasing profits by taking some of the profitable business away from the dominating factor. Resources of these organizations are small in comparison with those of the big competitor. Their morale is low because they have been consistently defeated in action with the dominating factor. The will to fight is negligible, because it seems hopeless. The temptation is almost irresistible to go out and dig up some kind of business which the dominating factor does not want or does not know about.

THIS is the eighth and concluding article of a series on the competitive principles involved in modern business enterprise to be published in IRON TRADE REVIEW. Here the author summarizes what has been discussed in detail in preceding chapters, and explains how to break a deadlock in competition.

We may now examine the situation with reference to the application of the principles of war to discover what strategic moves should be made by the opposing forces. The condition of equilibrium of forces exists in practically every field of competition for staple business at the present moment in the economic evolution of the country. Various names have been given to the condition, such as "prosperity without profits," "stabilized industry" and "era of big business." Outside the field of products which may be classed as luxuries, the condition is well nigh universal. Our interest here is to find out what can be done about it.

First we may consider the dominating factor. The only thing he can do is to garrison his position and hold it, if possible, as long as it is profitable. He must relentlessly drive down his costs to compensate for the inevitable loss in morale of his organization due to the fact that it is no longer advancing against the competition. The combatant leaders must be employed on another line of effort; first, to keep them from turning their energy towards the destruction of the force they have created, and, second, to provide against the day when a new alignment of forces will appear to overpower the garrison; or normal destruction of the value of the position will occur because there are no longer any profits.

From the strategic point of view, the dominating factor in a stabilized line must always fight a defensive battle. Also, from the strategic point of view, the final result is always certain—defeat. The only question is how long it can be warded off. If it can be warded off until the capital invested is written off, because it has all been paid back to the investors with interest and dividends earned, a theoretical solution has been found. As a practical solution, however, it leaves much to be desired by investors who bought the stock during the latter period of decline of the institution. When the final crash comes, these investors hold the bag, unless they have been able to participate in the additional lines of endeavor of the main combatant forces.

The ideal solution, and it has been attained in several instances, is to drive forward into new lines rapidly, garrisoning each position as it is won and by repeated successes build up such a large institution that the eventual failure of any one line does not materially affect the profits.

We may now turn to the opposition which confronts the dominating factor in a competitive field and see in what direction its opportunities for profit lie. We are now to apply the principles of war to the task of taking the profitable business away from the dominating factor. Any one of the field of competitors who has logical reasons for existence in the field and

a fair amount of resources has a chance to wreck the dominating factor and take his business. The first job is for the competitor who undertakes to do this to reorganize his forces so that they conform to the principles of organization of a strong military force. The next move is to bring those forces so organized, into combat with the opposition under conditions favorable to success in the attainment of the object, namely to take *profitable* business which is now being obtained by the opposition. The action must proceed rapidly.

We may now summarize what has been discussed in detail in the previous chapters on the development of the combat strength necessary to attain the object.

The Objective: Of course, the main objective is to earn profit. But just what business shall the organization compete for? Who are the particular customers whose business is to be obtained? How much do they buy? Are these questions answered with uncontestable facts or opinions?

The whole effort must be aimed at a definite objective. The cost of the effort must be balanced against the results in profits if the objective is attained. The job and the result in profits must be clearly defined.

Organization of Forces: The forces must be organized solely for the attainment of the objective. Every element of force which does not add combative power must be discarded, whether it be personnel, plant, equipment or some branch of staff activity. On the other hand, all elements which will contribute directly to combative power must be added if they are not already possessed. The military principle to be followed is that the forces must be adequate for the mission. The purpose of such organization always is to be able to bring to bear at a predetermined point and at a predetermined time a force which is superior to the forces of the opposition. The total force may be vastly inferior to the total opposition force but battles are always won by superiority of force at a given point and at a given time.

Organization of forces may imply the formation of a merger of two or more competing interests who face the dominating interest. The danger attendant on such merger formations, neglecting legal difficulties, is that there are too many subsidiary interests to be served which may detract from the combative strength of the forces merged. There are many cases in which a merger is not only justified, but becomes a necessity, but the net result of the merger must always be to combine elements of strength and eliminate elements of weakness.

Strategic Command: Ability to lead the forces in competition implies a knowledge of the strategy of combat, the tactics of competition, the will to conquer. Acceptance of the command by a leader involves tacit agreement to lead the forces into combat and carry the struggle to a conclusion.

The commander must actually command. He will properly seek advice from all interested individuals, including his subordinates, but he will make the final decision. The solution to the problem of what to do with a commander who does not win is a new commander.

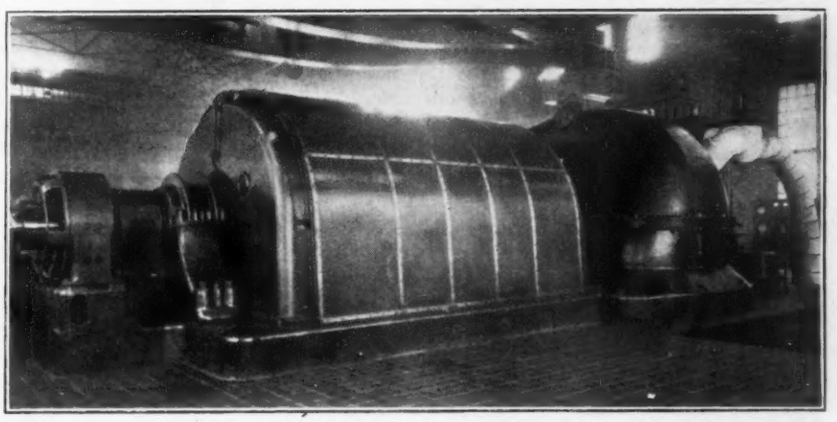
The measure of a commander is his success in the field with the forces under his direction; his peculiarities and temperament must be accepted as they are. The ability to command is too rare and difficult to find to insist on additional cultural qualities. Ability to command is rarely associated with the possession of a high degree of culture or a high degree of specialized knowledge in a particular field. Ability to command arises from qualities of character such as courage, sagacity, a mind subject to strong emotions from within but able to control those emotions, judgment, patience, mental directness.

Staff Activities: The staff activities such as advertising, sales, manufacturing, etc., have been discussed and tabulated. The point to be observed here is that all of these activities must each contribute just one thing to the effort, combat strength. Every branch of staff activity must center on the development of the maximum degree of power *in the predetermined direction.*

Salesmen must be found who can play upon the emotions of the prospective buyers, for the desire to buy comes more often from the emotions than from the intellect. These salesmen must be supported by technical experts who can handle the technical matters involved.

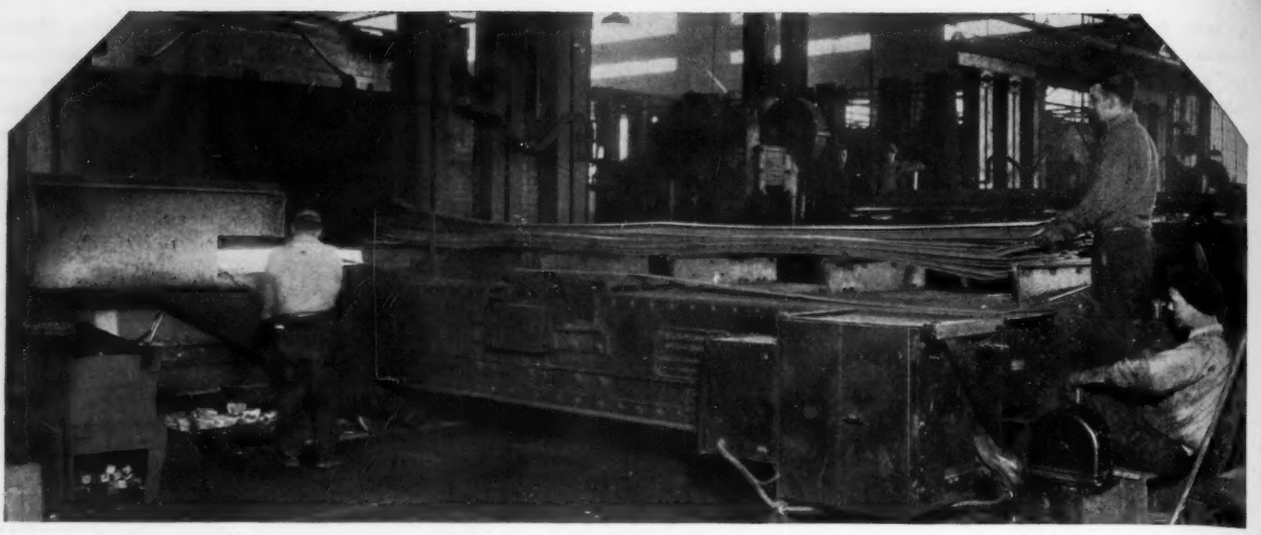
Morale: Competitive power reaches its maximum when the action assumes the aspects of a moral crusade. Morale binds the organization together to deliver the supreme effort as a unit, submerging all individual interests to accomplish the main purpose. Without morale the forces become a mob. Morale is based on understanding and feeling through the emotions of the fitness and desirability of the object to be attained. Morale is created by the emotion of fear inspired by the knowledge that the relatively small organization of which the individual is a part is undertaking to conquer a tremendously more powerful organization of forces.

LARGEST TURBINE GENERATOR INSTALLED AT GARY



INSTALLATION of what is said to be the largest turbine-generator ever installed by a steel mill was completed early this year at the Gary works of the Illinois Steel Co. This equipment, which is shown in the accompanying illustration, was furnished by the General Electric Co., Schenectady, N. Y.

The generator produces 30,000 kilowatts at 25 cycles 6600 volts and operates condensing. The tendency of steel mills to use large prime movers is indicated, not only by this, but also by similar installations made elsewhere. The Bethlehem Steel Co. has installed at its plant at Sparrows Point, Md., a 20,000-kilowatt turbine-generator and the Tennessee Coal, Iron & Railroad Co., is completing at Fairfield, Ala., the installation of two units of the same size.



Extra wide skelp intended for buttwelded pipe is fed into the heating furnace by magnetic chargers which can be moved to the clipping and bending shears for direct loading

New Pipe Mills Have Novel Features

Conveyors in Lapwelding Mills Are Motor Driven—Stock Passes Through Cold Straighteners Without Break in Handling—Other Diversions from Standard Practice Are Presented

By George A. Richardson

DURING recent years the Maryland plant of Bethlehem Steel Co., Sparrows Point, Md., has been continuously expanded through enlargements and betterments of existing units, and the development of new ones in furtherance of the plan to establish at this tidewater port up-to-date facilities for the manufacture of widely-used products which can be sea-borne to consumers in all parts of the world, including both coasts of the United States.

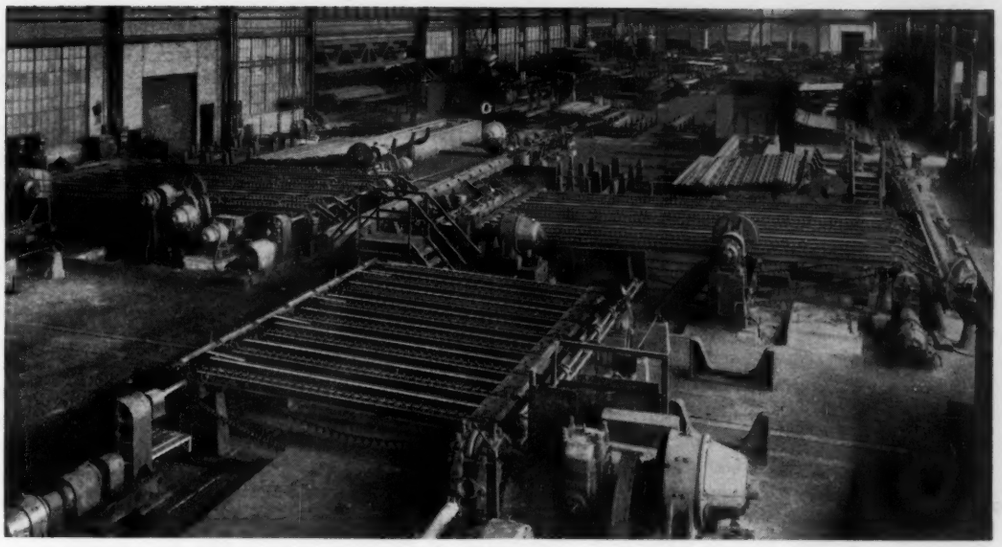
The latest construction is the modern plant for the manufacture of butt and lapwelded pipe. At the present time two butt mills and two lap mills with all auxiliary equipment are in full operation. All sizes of pipe from ⅛-inch diameter up to 16 inch outside diameter, inclusive, can be made. The two buttweld mills are exact duplicates and are designed to manufacture all sizes of buttwelded pipe from ⅛-inch to 3 inches inside diameter.

The new pipe mills are housed in structural steel and brick building made up of seven bays. Five of these units parallel each other, and running the long way of the building, house respectively Nos. 1 and 2 butt mills, pipe galvanizing shop and machine shop, a building bay for the manufacture of couplings, and the Nos. 1 and 2 lap mills. At each end, running at right angles to these units and extending the entire width covered by all of the above buildings, is a building for skelp storage and for the storage and shipping of the finished products. A separate gas producer building is located immediately adjacent to the mill buildings.

Gas leaves the producers at temperatures between 1200 to 1400 degrees Fahr., and passes to the heating furnaces through steel brick-lined overhead flues. Dust catchers, located adjacent to each gas producer outlet and approximately every 50 feet in these flues, make it possible to deliver clean producer gas to the various furnaces.

Skelp is stored in a building which extends across the entire front of the pipe mill buildings, and has storage capacity of 50,000 to 60,000 tons of skelp, more than ample for the requirements of both butt and lap mills. Skelp is brought here from the skelp mills by rail. Two 10-ton cranes are used for unloading, storing and transferring skelp directly to the shears at the charging end of the furnaces serving the mills.

General view of Bethlehem Steel Co.'s new pipe mill division at the Maryland works, Sparrows Point, Md. The buildings house two butt and two lapwelding mills



General view of Nos. 1 and 2 butt-welding mills looking east toward warehouse. In the immediate foreground are shown sizing rolls and short cooling rack

Skelp from the storage is transferred by crane to the clipping and bending shears where the ends are clipped and bent to more easily enter the welding bells. From here it passes down through the heating furnaces, welding, sizing, straightening, testing, threading, oiling, bundling, etc., emerging at the warehouse and shipping end as finished pipe ready for storage or for direct shipment, as required.

Extra large skelp heating furnaces, having hearths 9 feet wide are used. Into these skelp is charged by magnetic chargers, which travel not only over the entire width of the furnaces but can be moved up to the clipping and bending shears for direct loading.

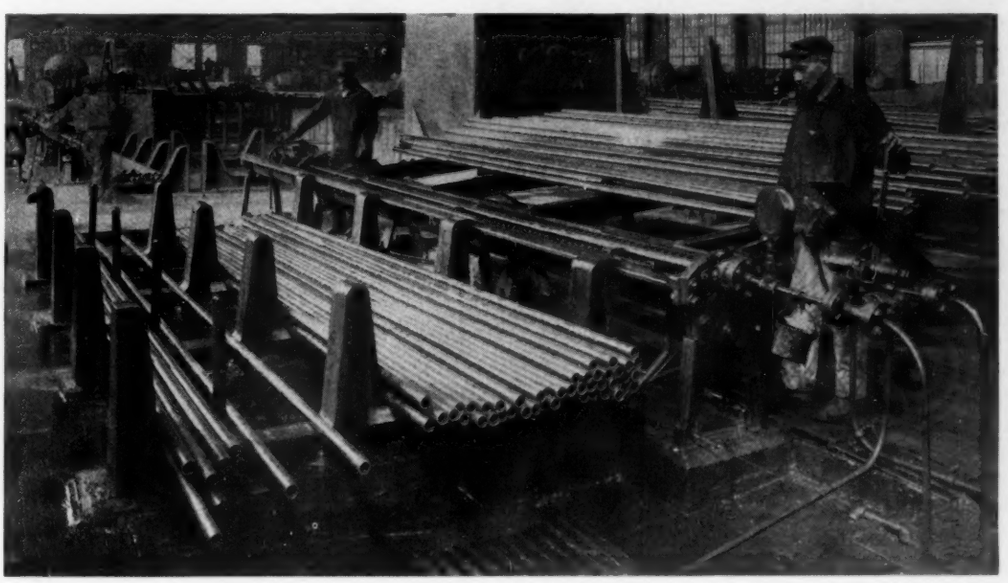
After being brought to welding temperature, the skelp is pulled out of the furnace, one piece at a time, and drawn through bells which are set by hand in a bell block or holder. This is fixed on the end of the drawbench nearest the furnace. The tongs, caught by attachments located at intervals on the drawbench chain, pull the skelp through a bell of suitable size and the skelp is bent and welded in one operation, forming a pipe which is slightly over-size. After removing the tongs the pipe passes to the size roll trough and through guides to the first sizing rolls; thence out onto a short cooling rack.

The second sizing rolls reduce the pipe to the outside diameter required by standard specifications. From these the pipe passes to a final cooling rack on which it moves between two high-speed saws which cut off the end far enough back to remove defective welds. These saws are staggered, one end of the pipe being cut off at a time. After sawing, a reaming and facing machine puts the ends in good condition, ready for straightening, testing and threading operations which later will be explained.

From the cooling rack the pipe passes through automatic straightening machines. These remove all kinks or bends and straighten the pipe to meet all requirements of the trade. At the same time, the outside surface is made smooth and practically all of the remaining scale is removed.

A thorough inspection is given to every piece at the cooling racks and after every step in the operation of the finishing department. Surface defects, split ends, imperfect welding, lack of straightness, are among the causes for rejection by the inspector.

After straightening, all pipe is subjected to an hydraulic test. Two hydraulic testing machines are provided for each of the butt mills and can handle any of the sizes made. These machines are of the quick-acting type, and are connected with a direct accumulator line at 750 pounds per square inch pressure. Four intensi-



Each piece of pipe must stand an internal hydrostatic pressure without leaking before being delivered to the warehouse and the shipping department

fiers give an added range of test pressures above and below 750 pounds per square inch as required for larger pipe and special pipe for ammonia plants, hydraulic work, etc. All defects in welds become apparent in the hydraulic test and pipe having such defects is scrapped.

Following the hydraulic test, the pipe is ready for threading. Two large size automatic six spindle threading machines handle all sizes of pipe from ⅛-inch to 2 inches diameter. Pipe from 2½ to 3 inches diameter is threaded on mill-type threading machines provided with an air grip. There are two machines to a threading bench, one at each end. The pipe is easily moved back and forth between the two machines on rollers set in the top of threading bench, one end of the pipe being threaded at a time. From the threaders the pipe goes to the inspection table for final inspection.

Pipe that passes the final examination goes to the coupling screwing-on machine, where each length is fitted with a coupling, and thence to the oiling machines. These are of the spray type and readily adjustable so that the thickness of the protective coating can be varied to suit the requirements.

When the protective coating has been applied the pipe goes to a table where each length is measured and where sizes from ⅛-inch to 1½ inches, inclusive, are bundled. In the case of bundled pipe, the total number of feet and inches is marked on a metal tag which is attached to the bundle. Pipe 2 inches and larger, is not bundled, and length in feet and inches is stenciled on each piece.

From the measuring and bundling benches the pipe may be loaded directly in the cars or sent to the warehouse. Small electric cars operated by third rail contact are used to transfer material from the measuring and bundling benches direct to the warehouse. The warehouse, which extends across the delivery end of the five-pipe mill building bays, is served by two cranes and has capacity for storing about 25,000 tons of butt and lapwelded pipe. In piling the pipe the practice is to place planks between each layer.

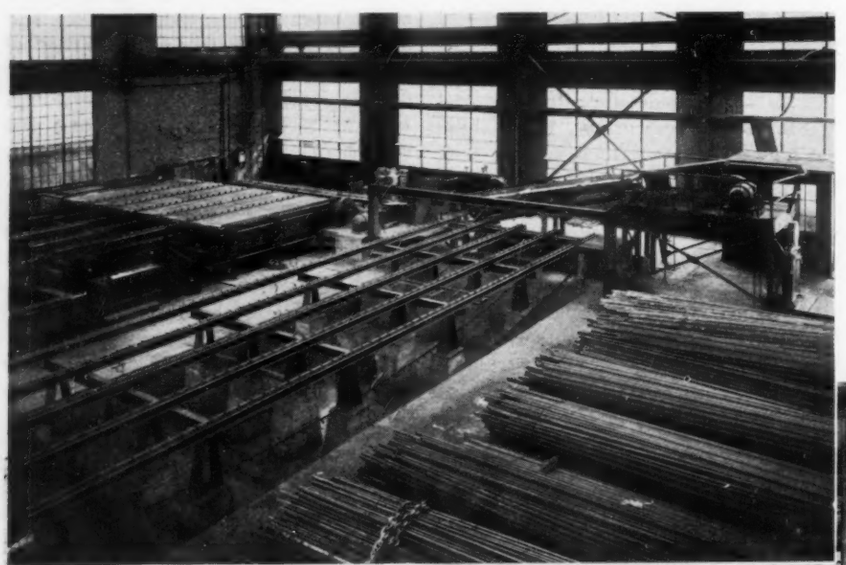
An interesting feature of the new pipe mills is the galvanizing department which opens into the side of the buttweld mill division. The equipment includes two sulphuric tubs, a rinsing tub, a muriatic acid tub, a drawing rack, waste gas heated drying plates, a galvanizing pot, and an inclined drawbench, cooling rack, etc.

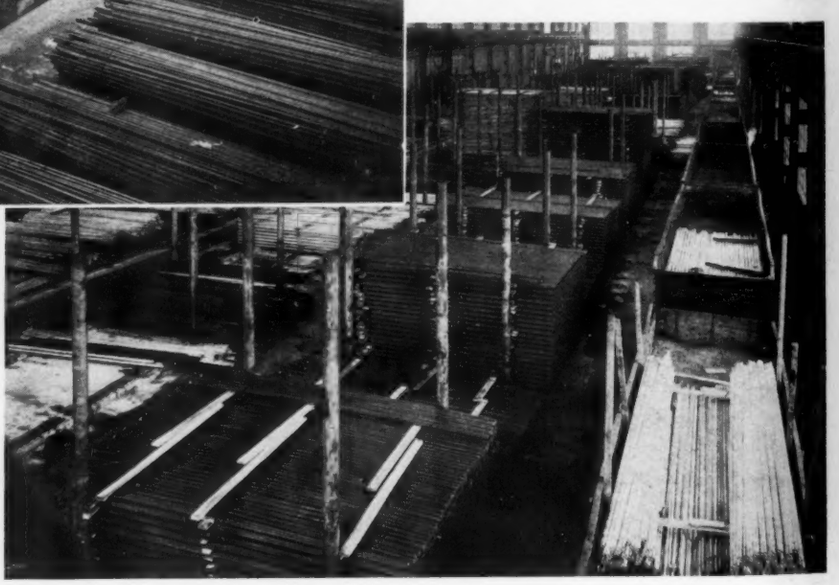
In general the procedure up to and including the galvanizing operation represents standard practice. Pipe to be galvanized is deposited on a receiving rack which extends into the buttwelding mill building and is served by the crane in this building. The pipe is delivered from the receiving rack into the sulphuric acid pickling tubs on top of large bronze sprocket chains hung in the various tubs. At given intervals these chains, which are operated by motor-driven sprockets, roll the pipe around in the bath and insure thorough pickling and cleansing.

The operations which merit attention in the galvanizing department are those that come after the actual galvanizing. Each piece of pipe is wiped by being drawn through steel wipers, which insures a smooth finish and results in a satisfactory spangle. The drawbench, of the angle type, is inclined, enabling any excess molten spelter to drain back from the interior of the galvanized pipe into the galvanizing pot. As the pipe is drawn up the incline to the top of the drawbench, each piece is applied against the nozzle of a compressed air-line, the air being used to blow the interior clean and get rid of any excess spelter.

From the drawbench the pipe goes to the cooling rack where it is allowed to cool slowly, while it is being conveyed to the delivery end. Galvanized pipe is not dipped in water at the Maryland plant, the elimination of this operation affording a better spangle finish and appearance. After cooling, the pipe is thoroughly inspected both on the inside and outside and then goes to the threading machines. The subsequent handling of the galvanized pipe is the same as that of black pipe, with the exception that there is no oiling of the surface.

Two building bays are given over to the lap mills. The No. 1 lap mill is capable of turning out all sizes of lapwelded pipe from 2 to 8 inches





At the top is shown the drying plate, spelter tanks, inclined drawbench and cooling rack in the galvanizing department. A general view of the warehouse is shown at the bottom

diameter, inclusive. The No. 2 mill, manufactures pipe from 6 to 16 inches, inclusive. These two mills are practically the same, except for differences in size of equipment, and a description of one is substantially a description of the other.

Skelp from storage is handled by a crane. It first is weighed and then loaded directly on a flat skelp loading rack. From here it is delivered on a flat skelp-charger, which moves electrically across the face of the skelp heating furnace.

From the furnace the skelp is pushed into the electrically-driven scarfing rolls so mounted that they can be moved across the face of the discharge side of the furnace from one side to the other. On leaving the scarfing rolls the skelp passes tc the scarfing table and is pulled across by chain conveyors to the drawbench, from which it in turn is drawn through the bending dies and is bent into shape for welding.

Skids are used to transfer the bent skelp to the traveling bent-skelp chargers, which charge the heating zones of the welding furnaces of the two-gutter type. There are two welding positions, the skelp being moved from the heating zones to the gutters which are located symmetrically on either side of the center line of the furnace. The welding of the skelp is done by welding rolls driven by a 400 horsepower motor. They can travel back and forth opposite the two welding troughs. The bars are controlled by a double bar puller.

Two sizing and two cross-roll straightening operations follow. Immediately after welding the pipe passes through the first sizing rolls and then through cross rolls which straighten it. From that point it passes the short cooling rack, which is operated at variable speed, thus making it possible to control the temperature entering the second sizing rolls, as at the butt mills. It then passes into the second sizing rolls and thence through the second cross rolls. As with the buttwelded pipe, the temperature is reduced between the first and second sizing so that the second sizing operation is to all practical intents and purposes done black hot, thus insuring correct size and rounder pipe.

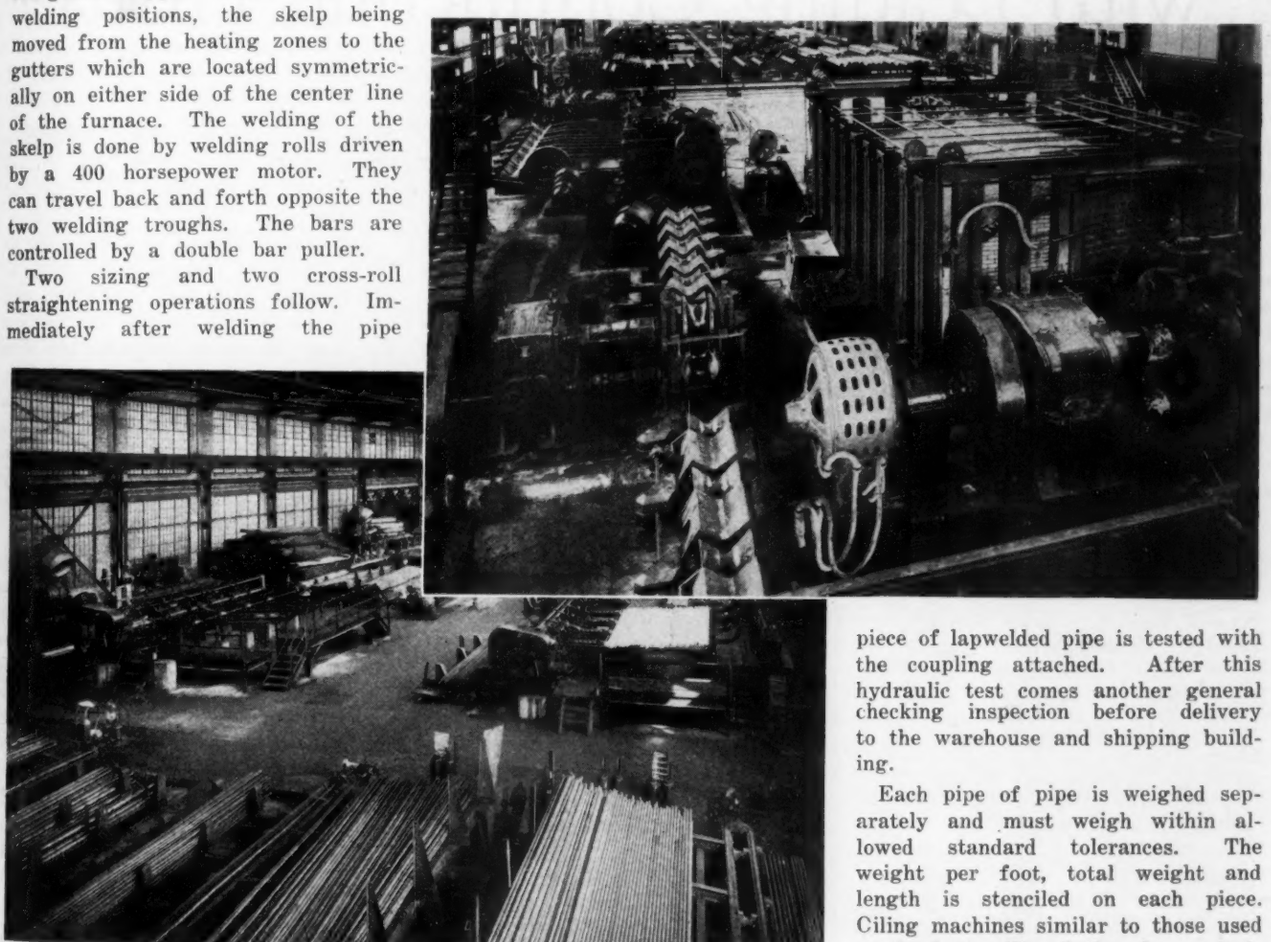
A cooling rack leading from the second cross rolls allows the pipe to cool down to normal temperature as it is being inspected. It then is weighed and conveyed to the cold pipe straighteners. A new feature in pipe mill layout is the location of the straightening machines. These are the only mills in the country where the cold straightening machines are in a direct line with the cooling racks, sizing rolls, etc. All pipe passes through the cold straighteners without any break in handling from the time it leaves the furnace until it is delivered to the finishing department.

After straightening, the pipe goes to cutting-off machines. There are two pairs of these, of the mill type, using double tools. The crop ends are cut off, ends of pipe faced, reamed, chamfered and rounded up, thus insuring true and round ends for the threaders.

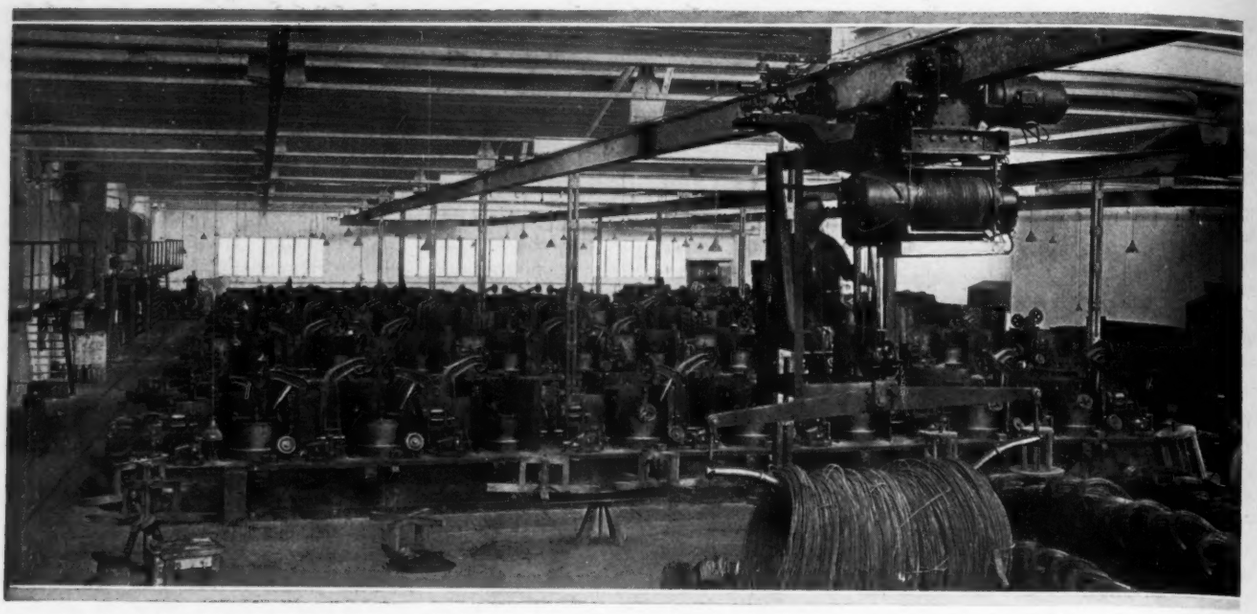
The threading machines, which are of the conventional mill type, with a lead-screw to insure correct pitch, are used solely for threading. This is a decided advantage, because this practice saves wear and tear, ordinarily occasioned by using the threading machines for chamfering, etc.

A unique feature of the lapweld mills is the used of driven roller conveyors for handling the pipe from operation to operation throughout the entire mill. Each piece of pipe is thoroughly inspected on large tables for surface defects, blisters, laminations, etc. The thread size is measured and checked for taper and pitch. After this inspection the pipe goes to the coupling screwing-on machine and thence to the hydraulic tester. Each piece of lapwelded pipe is tested with the coupling attached. After this hydraulic test comes another general checking inspection before delivery to the warehouse and shipping building.

Each pipe of pipe is weighed separately and must weigh within allowed standard tolerances. The weight per foot, total weight and length is stenciled on each piece. Ciling machines similar to those used at the butt mills oil the pipe as it is traveling through on a roller conveyor and the pipe is then ready for shipment or for stock.



General view of the No. 2 lapwelding mill looking toward the warehouse is shown at the top. The finishing department shown at the bottom serves the two buttwelding mills



One of the wire drawing plants in the wire nail and wire works at Bohumin, Oderberg

Czech Works, Modernized, Compete with Leading Continental Firms

By Vincent Delport

European Manager, Iron Trade Review

CZECHO-SLOVAKIA ranks as the leading iron and steel producing country of eastern Europe. Coal is plentiful and is produced in excess of the country's requirements. There also is a considerable output of lignite. Iron ore, however, is found only in Slovakia and Bohemia, and the richest ore contains but 35 per cent iron. The ore mines are a considerable distance from the coal mines. Consequently, imports of high-grade ore each year average about 800,000 tons, of which 60 to 70 per cent comes from Sweden.

The Czech iron and steel works are able to export 25 to 35 per cent of their production, the greatest demand originating in Scandinavia, the Balkan states, Italy, and Russia. The demand is mainly for structural material. A sales organization formed by the three leading producers receives and divides the export orders between its members. The export syndicate also includes the principal works of Austria and Rumania. This was rendered possible by an entente between the three countries, with the Rima-Murany works of Hungary.

The steel output of Czecho-Slovakia has increased consistently since 1923, when stimulus was given to the industry by the occupation of the Ruhr. In 1925 the output exceeded the 1913 tonnage. This development was made possible by the policy of the works, which each year devote considerable sums of money to the upkeep and modernization of the plants. The following figures in metric tons show the progress made in the last five years:

	Coke	Pig iron	Steel
1913	2,500,000	.....	1,237,000
1923	1,811,000	817,000	1,000,000
1924	2,219,000	983,000	1,220,000
1925	1,997,000	1,166,000	1,500,000
1926	1,981,000	1,088,000	1,575,000
1927	.....	1,250,000	1,625,000

There are in Czecho-Slovakia 18 blast furnaces with capacity for producing 1,780,000 metric tons of iron annually. In addition the Mannesmann-Cobourg Co. operates five small charcoal furnaces capable of producing 30,000 tons a year. The steel capacity of the country is estimated at 2,450,000 metric tons, of which 80 per cent is basic open-hearth. The Banska a hutni spolecnost, also known as Berg- und Huttenwerks Gesellschaft, or Zecho-Slovak Mining & Iron Co., of which a description follows, is one of the important iron and steel works and the largest coal producer in the country. It is a joint stock company with 100,000,000 Czecho-Slovak crowns ($2,965,000) of paid-up capital, and 180,000,000 crowns ($5,350,000) of reserves. The company's headquarters are at Brno, the capital city of the Czecho-Slovak province of Moravia.

The blast furnaces and steel works are situated at Trinec, near the Polish frontier; the sheet and plate, and bridge assembling works at Karlova Hut, near Moravska Ostrava; the wire and wire nail works at Bohumin, Oderberg, a Czechoslovak-German frontier station, and the chain works at Mala Moravska, near Opava in Silesia. All these works lie within the well-known coal district of Moravska Ostrava.

The company owns nine coal mines and three modern coke plants in the Moravska-Ostrava-Karvinna district, and iron ore and manganese ore mines in the Carpathians. The coal mines are equipped with up-to-date machinery, and in 1926 yielded an output of 3,400,000 tons, or over 10,000 tons per day. The three coke plants produced 659,000 tons of coke in 1926, in addition to which there was a considerable output of various by-products. The number of workmen employed in the mines is 15,000.

The largest of the steelworks owned by the company are those in Trinec, in the eastern part of Czecho-Slovak Silesia on the Bohumin-Kosice railway. The works were found-

ed in 1834, and now cover an area of several square miles. They consist of four blast furnaces, 11 open-hearth furnaces, three steel foundries, seven rolling mills, an electric power station, two coke plants, and various shops. The daily capacity of each of the blast furnaces is 300 to 450 tons of pig iron, and the capacity of the open-hearth furnaces about 300,000 tons per annum. The new works now in course of construction will have a capacity of 450,000 tons. The rolling mills turn out about 400,000 tons of rolled material per annum. The output of the steel foundries is about 30,000 tons. The coke plants produce 1100 tons of coke daily. The output of the works in 1926 was as follows: 286,000 tons of pig iron, 270,000 tons of ingots, 215,000 tons of rolled material and 220,000 tons of coke.

The manufacture of steel sheets and plates is concentrated in the works at Karlova Hut, where the bridge works also are situated. The works produce heavy, medium and thin sheets, and plates of all kinds, bright, black, galvanized and corrugated. The equipment is among the most modern on the European continent. During the last few years special care was given to the erection of the rolling mill for thin sheets, the output of which now is 2500 to 3000 tons per month. About 1000 tons of plates are produced monthly. The bridge works turn out bridges and constructional work of all kinds. Most of the railway bridges in Rumania and Galicia were fabricated there. The Danube bridge near Vienna, a conspicuous piece of engineering work, and the Vienneese town hall, were erected by Karlova Hut. In addition, a new large rolling mill for thin sheets now is in course of construction, the output of which is to be 10,000 tons per month.

The Czecho-Slovak Mining & Iron Co. further owns wire nail works at Bohumin, Oderberg, an important railway junction at the frontier station of Czecho-Slovakia, Germany and Poland. Through railways to Hamburg, Bremen, and Stettin in the north, and Trieste in the south are a considerable advantage, making it possible for the works to export over two-thirds of their output. The works produce 50,000 tons of wire products. The chain works are at Mala Moravka (Klein-Mohrau) and produce all kinds of commercial and industrial chains.

Parts Are Heat Treated

(*Concluded from Page* 999)

ishing. Wherever needed is found an electric hoist or crane.

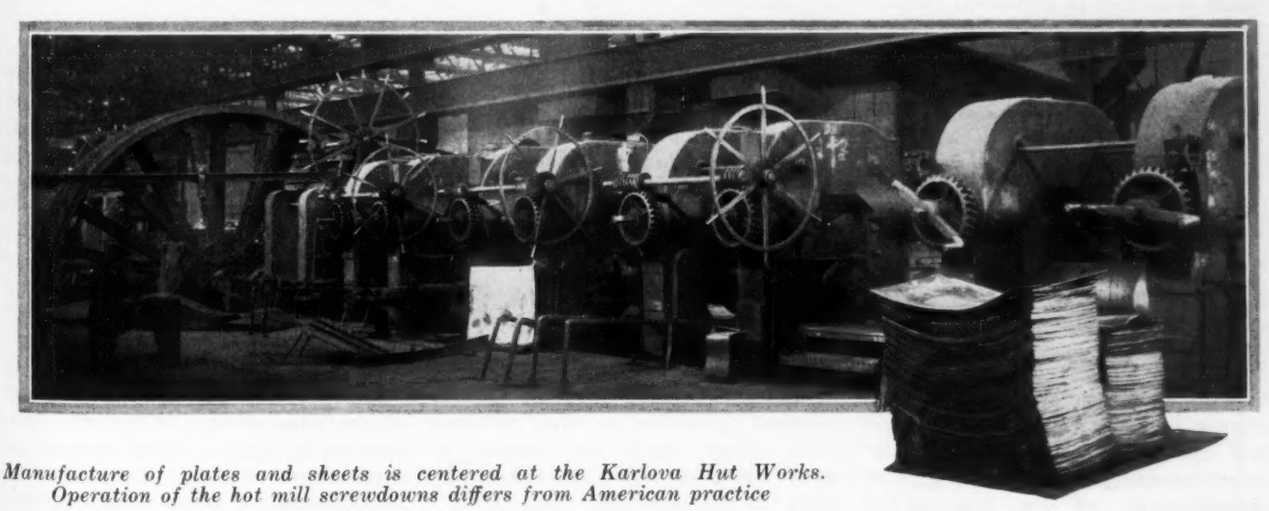
Machining of the larger parts of the job press is performed in another building. This department produces a standard line and the equipment includes machine tools of all types. Due to tooling and gaging some of the mills will machine 12 surfaces at a pass while the planers handle six pieces at a time. This section is served with nine cranes on three overhead runways.

A complete machine shop is maintained for the manufacture of tools, dies and jigs and for machine maintenance. Heat treating here is performed in seven gas-fired furnaces ranging up to 18 x 30 inches in cross section. The rotogravure cylinders are copper plated in a special department where cast iron cores are plated to a depth of $\frac{3}{16}$-inch. It takes three weeks of continuous deposition to obtain this plate which is superior in respect to its etching qualities.

As the presses made by this company seldom wear out the natural conclusion is that the heat treating department and the methods therein employed are near perfection, for no machine can be any better than the steel from which it is composed. All the allow steels, carbon tool steels and high speed steels are hardened and drawn here.

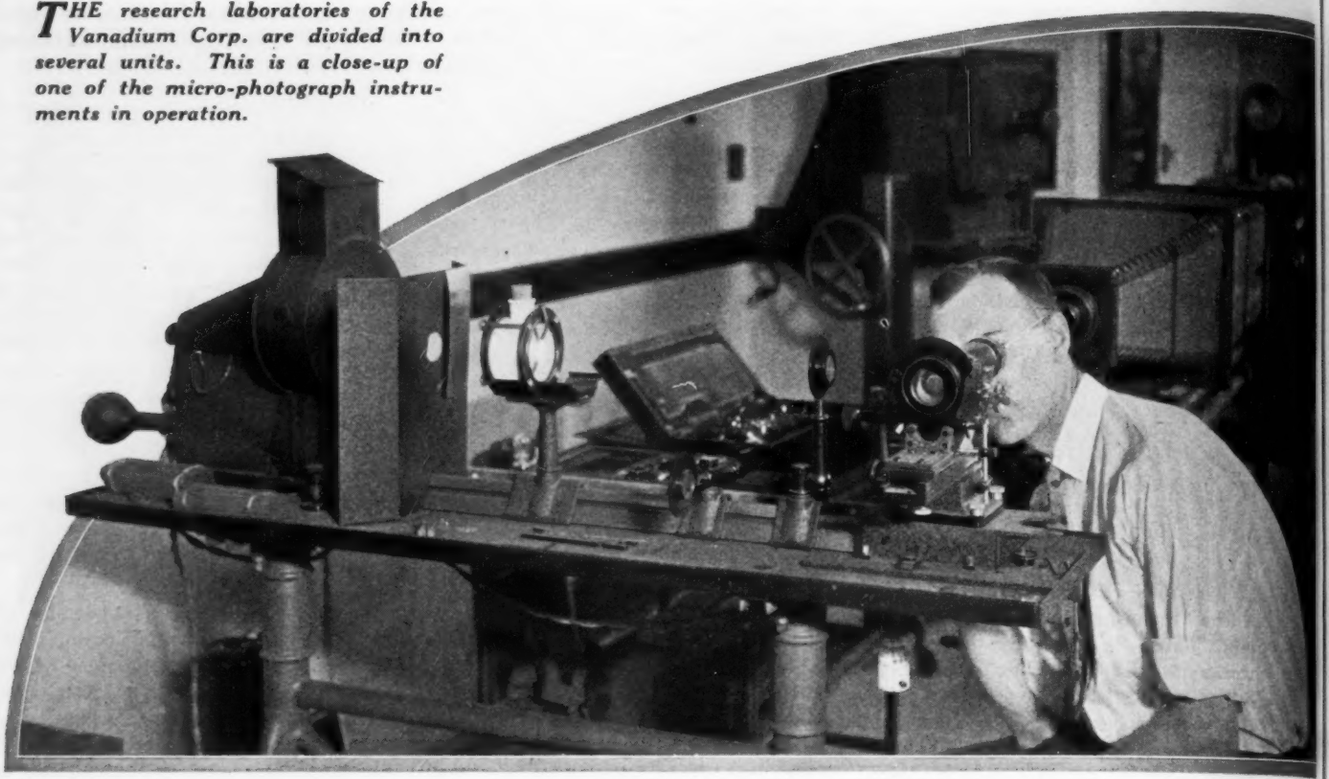
Several furnaces of the standard type are used to heat the parts for hardening and these are served with the usual quenches. One unit, which is a little unusual, is a three-high furnace. It has three chambers one above the other. The upper chamber is heated and the waste heat from it passed down into the other two. The three chambers are maintained at 2400, 1700 and 1000 degrees Fahr., respectively, and are used progressively for preheating and heating. This furnace is 5½ feet high and about 3 feet square in cross section. Drawing is accomplished either in oil for high carbon steel or in a salt bath for high speed tool steel. Gas is the fuel used.

Carbonizing and case hardening of the rollers and shafts is accomplished in another department and some of the larger parts are hardened here also. A special carbonizing furnace, the first one of its kind ever built, is of interest. This unit is cylindrical in shape and is set up vertically. It is 7 feet high and 5 feet in diameter and is heated with 18 gas burners. Instead of boxes, three retorts are fixed stationary within the combustion chamber. These are charged with a small amount of carbonizing material while gas is passed through them continually during the heating period. Parts that it took 24 hours to carbonize in the old coal-fired furnaces are treated in eight hours in this unit. There are also several gas-fired rotary carbonizing machines. Brick furnaces, cyanide pots and lead pots, all gas-fired and served with brine quenches, are used for hardening. Some of these furnaces are equipped with automatic temperature control instruments while the others have recording pyrometers.



Manufacture of plates and sheets is centered at the Karlova Hut Works. Operation of the hot mill screwdowns differs from American practice

THE research laboratories of the Vanadium Corp. are divided into several units. This is a close-up of one of the micro-photograph instruments in operation.



Alloy Steels Speed Industrial Progress

Trend of Engineering Development Is Toward Greater Dependence on Alloy Steels Which Have Made Recent Achievements Possible—More Qualitative Research Needed

By B. D. Saklatwalla

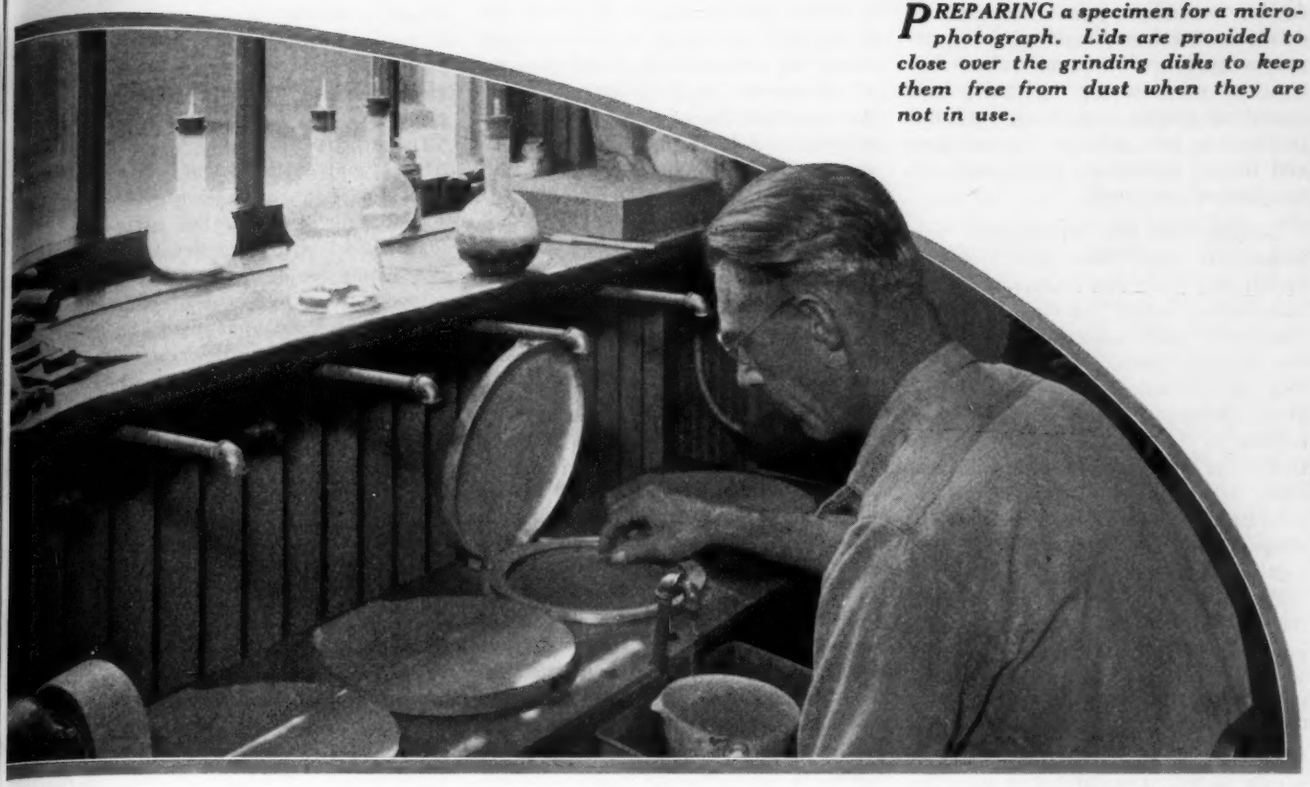
PHENOMENAL as the growth of general steel tonnage may seem, the growth of alloy steels within the last few years has been still more surprising. While the steel tonnage may have doubled itself in this interval, alloy steels have augmented several times faster than this increase, according to statistical records.

MANY of the recent achievements in engineering were made possible by the availabilty of suitable alloy steels. The accompanying article, which deals with the trend of engineering development in steel, is abstracted from a paper prepared for presentation before the American section of the Society of Chemical Industry of London. The illustrations, showing views in the research laboratories of the Vanadium Co. of America, are presented through the courtesy of that company, of which the author is head of the research department. —*The Editors.*

We term alloy steels, in contradistinction to carbon steels, ones which contain in their constituents, besides iron and carbon, an element or elements capable of altering the physical characteristics of the iron or of augmenting or otherwise influencing the effect of the carbon present. Plain carbon steel manufactured under laboratory conditions from selected ingredients is capable of giving physical properties of the highest order, but actual experience with commercial carbon steels is different due to limitations of the process of manufacture. Alloy steels, in spite of limitations, tend to bring up the physical properties to that optimum that carbon steels are capable of achieving only under extreme conditions of uncommercial importance.

An explanation of these observed experiences is found in the analysis of the process of solidification and subsequent heat treatment of steel. Steel solidifies from the liquid state by selective freezing. Solidification starts from several nuclei in the molten magma. Besides external physical conditions like the rate of cooling there are internal physical conditions which have an important bearing on the ultimate physical constituents of the solidified and heat-treated steel and consequently upon its physical engineering properties. These internal conditions are dependent upon and can be altered by chemical composition of the material. The addition of alloys brings about the necessary change in chemical composition to alter these internal conditions.

In the diagram on page 1009 the solid outline represents the equilibrium changes during the process of solidifying and cooling where the composition in percentages of carbon and temperatures are co-ordinated. The solidification of steels with varying



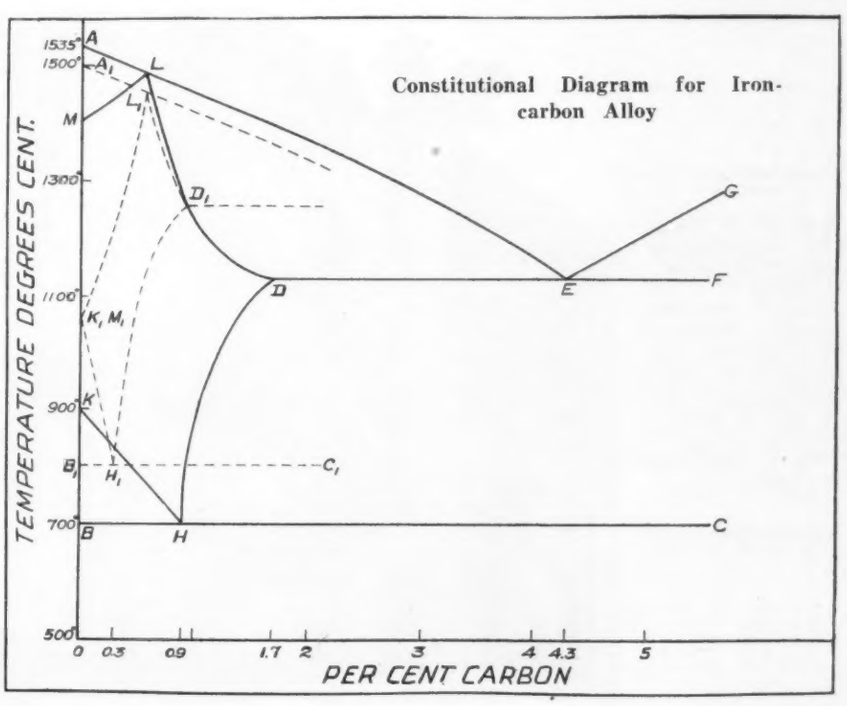
***PREPARING** a specimen for a micro-photograph. Lids are provided to close over the grinding disks to keep them free from dust when they are not in use.*

percentages of carbon is represented graphically. Solidification for the different percentages starts along the line *ALEG* termed "liquidus" and the line *ADEF* termed "solidus" indicates completion of solidification. Subsequent to solidification thermal changes occur which are completed at the line *BHC* when total equilibrium is established.

The physical engineering properties of steel are determined by the characteristics and size of the crystallites forming the aggregate of steel. These crystallites are formed from nucleal centers in the melt during a thermal history represented by the area *ADEA*. The line representing commencement of crystal formation, namely, *ALEG*, may be termed the line of "conception" and the line *ADEF* along which crystallization has completed and the steel emerges as a new solidified body may be called the line of "birth." However, transformation changes continue to take place beyond the line *ADEF* and final equilibrium is not attained until it has passed the line *BHC*. Any changes brought about by heat treatment of fabricated steel also are complete at the line *BHC* so that beyond it the steel emerges ready to shoulder its engineering responsibilities. Therefore, *BHC* may be called the line of "adolescence".

The picture thus drawn is the biological concept of steel metallurgy and the analogy is a very real one. The process of formation of steel out of a molten magma by crystallization starting at various centers or nuclei is exactly analogous to the formation of protoplasmic cells and their growth to a body by aggregation. As in biological growth, so in steel we find that the influences, chemical or physical, which affect the phenomena taking place in the area *ADEA* have a profound effect on the properties of the ultimate steel. These effects are such as not to be obliterated by subsequent treatment of the solid steel.

Ingot casting practice is represented by the area *ADEA*, which may be called the "prenatal" area. The influences affecting the phenomena in this area may be termed "prenatal influences". As in biology, so in steel metallurgy these "prenatal" influences have been found to be of tremendous importance. Analogously we can term the area *ABHCFEDA* as the area of "adolescence" and similar as in biology the care and nurture lavished on the steel at this period is reflected in the ultimate engineering qualities of the steel that eventually emerges.



Again, experience bears this out, as defective soaking pit practice, or improper period of heating before fabrication, or improper reheating and quenching during heat treatment after fabrication, are reflected in weakness and failure during the adult engineering life of the steel.

Looking at the equilibrium phenomena in steel from this biological standpoint, we can understand the tremendous effect exerted by comparatively small amounts of some of the alloying elements. The introduction of the alloying element brings about changes in the physical characteristics of the constituents from which the ultimate crystallites of the steel aggregate are formed. The solidification occurs at a different temperature, the "liquidus" or "conception" line may have changed its contour or its relative position in the diagram. The "prenatal" area may change its configuration entirely, so may all the other transformations occurring prior to the line of "adolescence" change their velocities or temperatures of reaction. In other words, by the introduction of an alloying element the whole equilibrium diagram may shift in its field or may distort in the various area of which it is made up. The resultant effect is that the phenomena have taken place more or less rapidly or at different temperature intervals owing to the internal physical conditions such as viscosity, heat conductivity, diffusion velocity, etc., being altered.

As a more or less extreme example of distortion of the equilibrium diagram by the addition of alloys, there is superposed in Fig. 1 in dotted line a diagram* showing the changes effected by the addition of 14 per cent of chromium to iron-carbon alloys. We see that the area *ALM* has been altered to $A_1L_1(K_1M_1)$. Similarly, the areas *K B H and LMKHD* are changed respectively to $(K_1M_1)B_1H_1$ and $L_1(K_1M_1)H_1D_1$.

These distortions will have great effects on the physical properties and heat treating propensities of the finished steel. In the case of the ordinary structural alloy steels where the percentages of alloying elements are not quite so high the distortion of the diagram is not so marked but it is sufficiently present to alter the fabricating, heat treating, and service qualities of the steel to a tremendously high degree.

Condition Is Clearly Defined

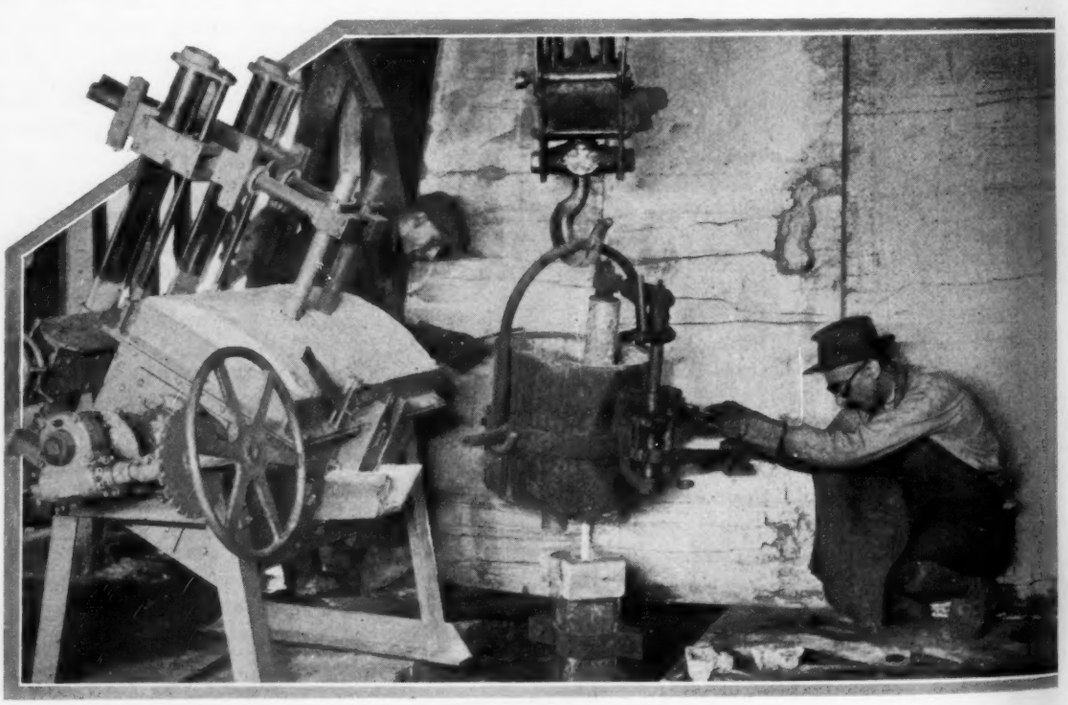
From this standpoint the greater emenability of alloy steels to heat treatment or their ability to undergo equilibrium changes in the solid state to a more complete extent without undue prolongation of the time element is more readily understandable.

We have emphasized the fact that the engineering properties are dependent on the structural constituents rather than on the chemical composition of steel. For the same carbon content different structures are obtained by different heat treatments. For instance, an eutectoid steel, with a carbon content of 0.9 per cent shows the characteristic lamellar structure of an eutectic if allowed to cool slowly. This structure has been designated "pearlite". With the increase of cooling or quenching velocity the gradations of structure produced are termed: "pearlite", "sorbite", "troostite", "martensite", and "austenite". The addition of alloying elements tends to bring about the same structural effect with less drastic quenching, hence the desired structure is obtained with a less severe condition of strain which is undoubtedly a great advantage. Since alloy elements are thus capable of directly influencing quenching and structure, a grouping of the alloying elements based on this influence has been suggested.** In the one class are included nickel and manganese exerting similar influence on the structure and in the other tungsten, molybdenum, and vanadium are grouped together, whereas chromium occupies an intermediate position sharing the characteristics of both groups.

The influence of alloying elements, especially of the second group, on the structure, and the fact that the presence of alloys has a marked influence on the quenching rate, lead us to believe that they have a great bearing on the rate of carbide diffusion through the steel. Also the appearance of the carbides in the presence of alloying elements is different, suggesting that the dispersion or coagulation of the carbide particles is effected by their presence. The exact nature of this influence of alloys is not known and its investigation

*From "Nature of the Chromium-Iron-Carbon Diagram" by Marcus A. Grossmann, Transactions American Institute of Mining and Metallurgical Engineers, Pamphlet No. 1612-C, Dec., 1926.

**From "Alloy Steels—Their Manufacture, Properties and Uses," by H. C. H. Carpenter, Journal of Royal Society of Arts, Jan. 27, 1928.



MANY large manufacturers find it advisable to maintain two independent laboratories, one for production and the other for research work. A small heroult electric furnace is used for melting alloys of various composition for tests.

will afford a fruitful field of metallurgical and engineering research.

Up to now we have considered the effect only of metallic elements, and the metalloid silicon, in steel. Nonmetallic elements such as sulphur and phosphorus which were considered as only evils in steel composition are beginning to be recognized as of some value. Ferrosulphur and ferrophosphorus are added to steel to obtain definite physical characteristics in the finished metal. Another nonmetallic element which promises to play an important part in engineering steels is nitrogen. Processes for alloying nitrogen with the surface of fabricated steel by means of gaseous nitrogen compounds have been developed. Such nitrified steel not only shows good physical surface properties in regard to wear and abrasion but also in respect to resistance to corrosion and oxidation. It may be mentioned that this nitrifying is brought about only in the presence of other alloying elements in the steel, such elements being aluminum, chromium and vanadium.

The alloy steels referred to up to now contained only relatively low amounts of alloying elements, the function of such amounts being to intensify the effect of the carbon and to augment the physical properties of such steels. However, alloy steels with considerably larger amounts, from 12 to 40 per cent and over of the alloying element, are utilized for specific purposes. High-speed tool steels containing large percentages of tungsten, chromium, and vanadium, are the most frequently encountered examples. One of the earliest alloy steels, Hadfield's manganese steel, contained from 12 to 14 per cent manganese. Later nickel steels of the "Invar" type containing from 35 to 40 per cent nickel were developed and today the exploitation of high-chromium steels of the "rustless" or "stainless" type is carried on with feverish energy. This last type of steel contains chromium from 8 to 60 per cent, either alone or associated with other alloying elements such as nickel, silicon, or copper.

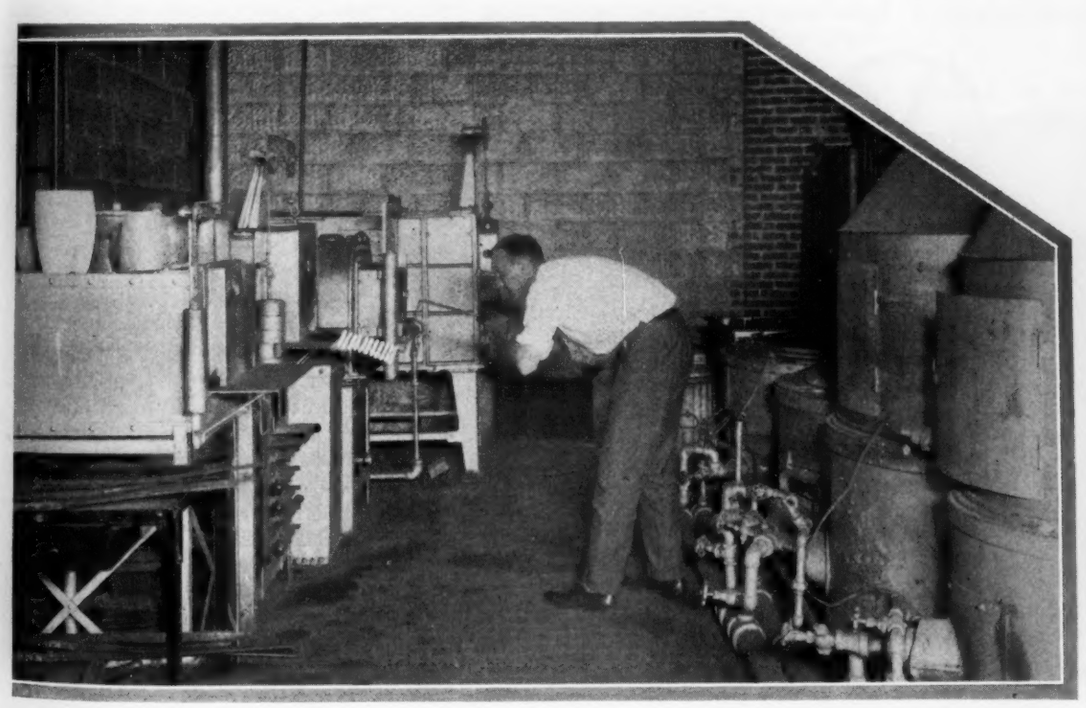
Properties Are Important

These high percentage alloy steels, owing to their very remarkable properties of resisting corrosive chemical action and oxidation at ordinary and high temperatures, portend to play an important part in the future of engineering. Their application in the chemical industries is ever increasing and the present-day internal combustion engine would not be capable of performance, especially as the motive power for continued aeroplane flights, were such steels not available for their exhaust valves. The one drawback of the high-alloy steels is their increased cost. For their production high grade ferroalloys are required. To offset this high-tungsten and high-molybdenum containing steels have been manufactured directly from ores and oxides or salts of these elements. In the case of chromium, similar processes are being developed and to some extent already utilized, especially in Europe. Their commercial application will be established with the working out of operative details.

An intermediate grade of steels has been developed. Such steels containing chromium, together with other elements such as copper, form a class of rust-resisting and corrosion-resisting products, which, while not possessing the extreme resistive properties of the "stainless" type for some purposes, still are very much more resistive than the ordinary corrosion-resisting products as ingot iron, plain copper-bearing steels, wrought iron, etc. Their main advantage lies in the fact that owing to their low-chromium content they can be produced in the open-hearth, at low cost, not requiring expensive electrical melting like the steels of the stainless type. Their field of usefulness and application would therefore be much wider. Their use would not be possible where "stainless" type steels would be precluded on account of high cost.

Alloy steels have been responsible for important developments in several industries. The efficiency of electrical equipment is based on the use of high-silicon steel, a steel carrying about 4 or 5 per cent of silicon. Besides the use of silicon steel in motors, generators, transformers, etc., all magnetic apparatus is dependent upon steel carrying either tungsten, cobalt or chromium. Resistance heating elements are also dependent upon high percentage alloys of chromium and nickel, which have made the extended use of electrical heating possible.

Alloy steels have played an important part in the generation of power. High-speed turbines with high chrome steel blades have been developed and with the advent of steels possessing great mechanical strength at high



THIS heat treating department is for research work only. It is a complete heat treating unit, including gas and electric furnaces, lead and molten salt baths, cyanide tanks and other equipment widely employed in research activities.

temperatures the problem of the internal combustion turbine will be solved. In the generation of steam power and superheating steam, boiler material is required similar to the requirements of the oil-cracking and synthetic nitrogen industries, where nickel, and especially vanadium, are useful. The modern tendency in locomotive construction is toward higher and higher pressures and boiler plates and staybolts and rivets will be subjected to higher stresses. Vanadium steels are being developed especially for this work. Nickel has also been investigated for the purpose.

Another engineering achievement which seems to promise revolutionary results in transportation problems is the application of roller bearings to railroad work. This would not be possible without the use of appropriate alloy steels.

To the engineering practice alloy steels not only afford better, more uniform, and more reliable, ultimate products but sometimes afford unusual advantages in the process of manufacture. Parts that may be made of carbon steel and heat treated by quenching to obtain the necessary physicals can be made of alloy steels in the normalized or unquenched condition, thus avoiding quenching strains.

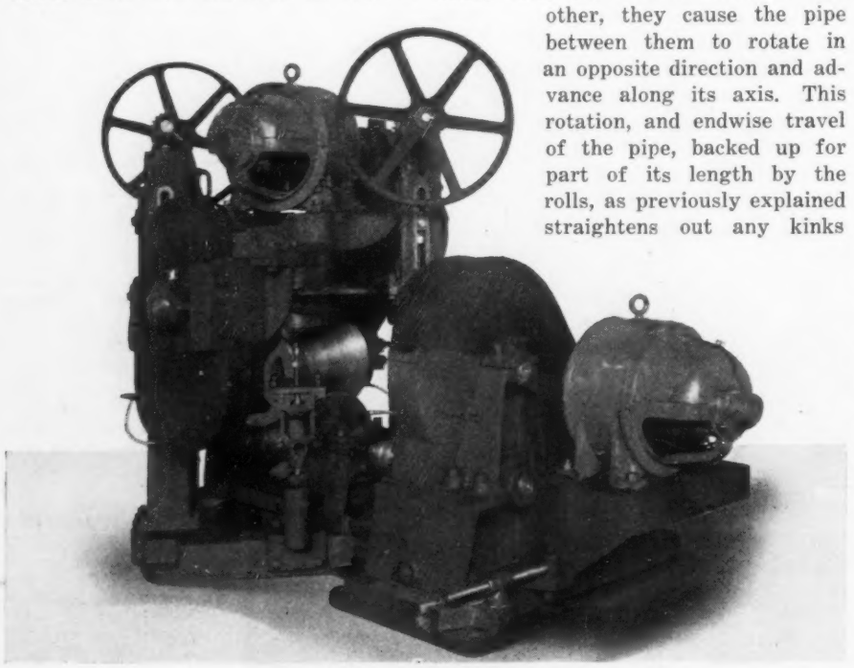
As a concrete example may be cited the case of crankshafts for internal combustion engines. For multicylinder engines with probably eight cranks stresses are set up through quenching necessary in the case of carbon steel requiring several straightening operations. By the addition of vanadium the same physical properties are obtained in the normalized condition. In such a case in spite of the added expense of vanadium the ultimate crankshaft is cheaper owing to the saving in the straightening operations. Similarly in some molybdenum steels an added advantage is gained in the cost of machining operations. Also in mass production the advantage of alloy steels appears from the cost standpoint.

It may be well to emphasize the fact that the various alloy steels are not generally interchangeable for a given purpose. Each alloy has a more or less specific requirement to fulfill. This becomes apparent when we refer back to the diagram in Fig. 1.

Considerable interest has been aroused recently in the subject of research in steel metallurgy. Progress should be directed in the development of correlation of test and service. We have progressed considerably in this respect in the last few years in relation to corrosion tests. We have not yet developed a rational abrasion or wear test. Our criterion of brinell hardness is not consistent when wear has to be evaluated. Our knowledge of properties of steel at high temperatures is still limited. We lack a visual representation of how steel actually fails under certain conditions and how failure progresses. A cienematographic study of some of these phenomena may clear up some of our ideas as to the behavior of steel under service. Our progress should lie along qualitative than quantitative lines. As an example of new methods may be cited the development of X-ray analysis. As a stimulus to the metallurgist should be the progress history of the geophysicist. We are not able to study as yet the high temperature changes occurring in steel by means of the hot microscope. We devote too much effort and attention to microscopic and too little to macroscopic investigations. We can learn considerably by the methods and experimental technique of the biologist, the mineralogist, the glass technician, and the geophysicist.

Pipe Straightening Machine Is Built Compactly

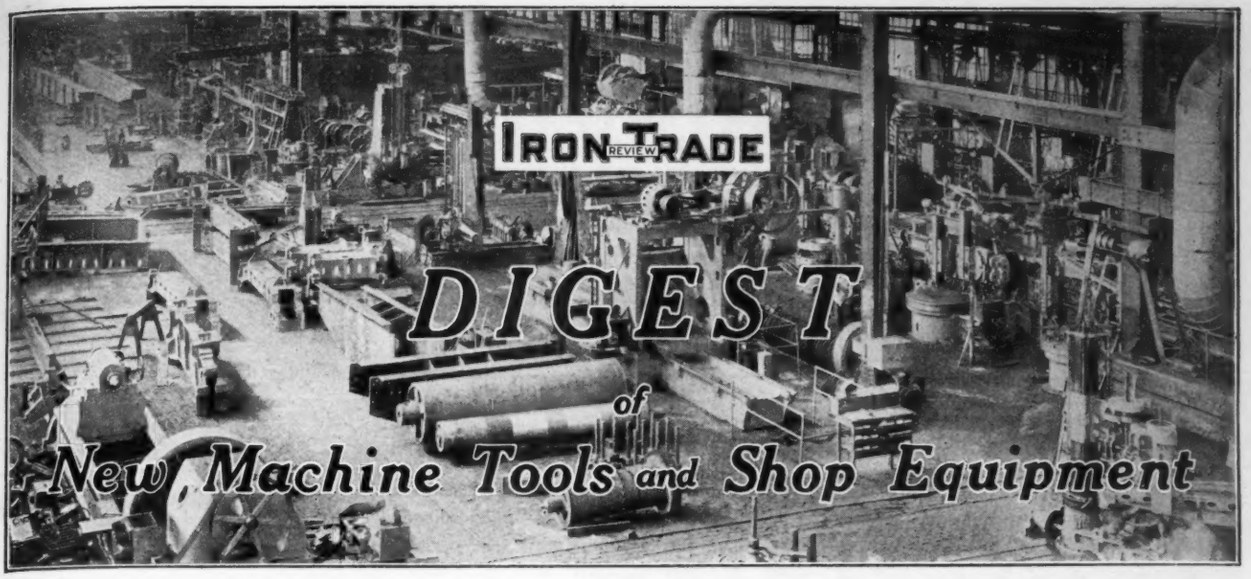
A CROSS roll machine is employed in pipe mills to straighten and, to a certain extent, round up the tube or pipe after it has passed through the welding and size rolls. According to an article in the March issue of *United Effort*, it consists of a pair of rolls whose axes are crossed and whose faces are concaved in such a manner that when placed at a certain distance apart, a straight pipe thrust between them on a third axis would be supported for a part of its length by these rolls, the surfaces of contact forming a double spiral line around the circumference of the pipe similar to a course double thread. When these rolls are rotated toward each other, they cause the pipe between them to rotate in an opposite direction and advance along its axis. This rotation, and endwise travel of the pipe, backed up for part of its length by the rolls, as previously explained straightens out any kinks or curvatures which arise in the process of manufacture.



The machine shown in the accompanying illustration has several features foreign to its earlier kin. The rolls are carried on roller bearings. Both rolls are pivoted so that the crossing angle is variable and the top roll is raised and lowered by hand-operated adjusting screws. The top roll is also arranged so that either end may be tilted up or down slightly to permit the pipe to enter more easily.

Each roll is driven by a separate motor, that for the top roll being mounted above, while that for the bottom roll is mounted on the same base as the roll it drives, and pivots with it when the crossing angle is changed. All gears are steel, with cut teeth, the driving gears being fully enclosed in covers to insure the safety of the operator. The machine shown in the accompanying illustration will handle pipe from ⅜-inch to 4 inches diameter, and is driven by two 10-horsepower variable speed motors running from 400 to 1600 revolutions per minute.

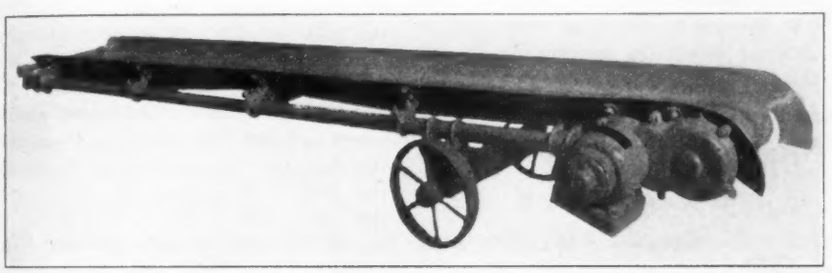
The Belfont Iron Co., Belfont, O., will dispose of its towboat and barge equipment.



Screw Machine Rods Are Fed Automatically

No. 98

Brown & Sharpe Mfg. Co., Providence, R. I., has brought out for use with its line of automatic screw machines an external feeding mechanism known as the automatic rod machine. This mechanism, shown in the accompanying illustration, consists of an arrangement holding several rods at the left of the machine and replaces the customary stock stands. When the machine is in operation, a new rod is automatically fed into the working position as the preceding rod is exhausted. By its use the nonproductive time of machines remaining idle awaiting replenishment of stock is greatly reduced. The new magazine is simple in design and construction and is operated by the machine itself, a feature which makes it possible for unskilled labor to be used for the loading. When the end of the bar on which the machine is working passes a certain point, a stop comes in contact with the starting lever of the machine at the instant the last piece is cut off, stopping the machine simultaneously with engagement of a clutch that delivers power to the rod magazine. At this point a new rod drops into the feeding position and is advanced forward to the chucking position and the machine again automatically starts. The magazine proper can be filled at any time, accordingly there is no need for the machine to be stopped, other than when the tools require sharpening or if attention must be given to the work. The automatic rod magazine is said to be particularly advantageous for use with high-speed machines where the rapid rate of production requires a more frequent replenishment of stock.

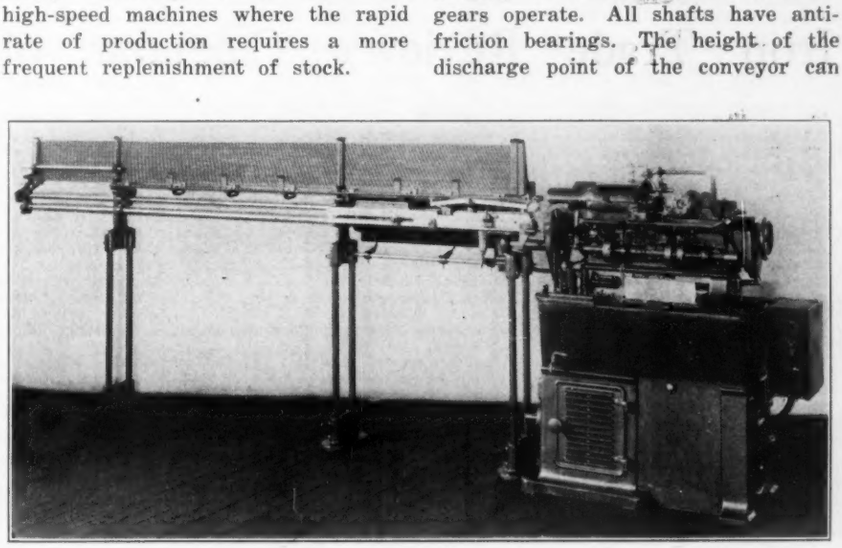


No. 99—Portable electric-driven conveyor for loading and unloading

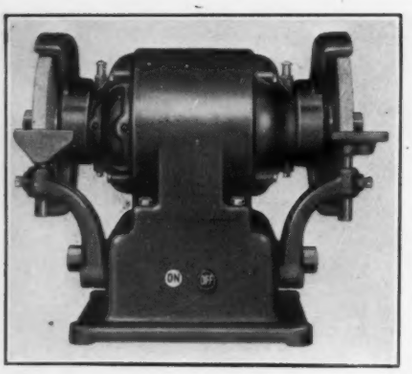
Portable Conveyor Made Light in Weight

No. 99

Link-Belt Co., 910 Michigan avenue, Chicago, is introducing a portable conveyor built light enough so that one man can move it easily and quickly. It can be used for unloading packages, bags, coal, rock, and the like on wharves from or to box cars. Mounted on agricultural-type wheels of 14-inch diameter and 2-inch face, a 12-foot conveyor complete with motor weighs 640 pounds. With a 15-foot conveyor, the weight is 710 pounds. The wheels are movable to practically any point along the entire frame, which consists of two heavy pipes tied together at head and foot ends by electric steel castings. A pipe handle at the foot end facilitates handling. The casting at the head end provides a base for the motor and a grease-tight enclosed housing in which the cut reduction gears operate. All shafts have antifriction bearings. The height of the discharge point of the conveyor can



No. 98—Rod feeding mechanism for automatic screw machine



No. 101—6-inch portable grinder

be adjusted by moving the wheels forward or backward along the conveyor frame. The wheels also are provided with three positions for vertical adjustment. Lubrication seldom is necessary as all bearings are of the antifriction type and all gears run in a bath of grease.

Sheet Metal Bench Tool Is Made Heavier

No. 100

Niagara Machine & Tool Works, 637 Northland avenue, Buffalo, has put on the market a heavy combination bench machine for turning, wiring and burring operations on sheet metal. This machine is a larger size of the combination machine described as Item No. 256 on page 1147 of the No. 3, 1927, issue of IRON TRADE REVIEW. The smaller unit handles the lighter gages, while the larger takes the heavier jobs up to 18-gage metal. The machine is arranged with back gearing and has a sturdy one-piece enclosed frame. The faces are made of high-grade steel, hardened and polished and are removed easily and interchanged for burring, turning, or wiring operations. The tool should prove useful to manufacturers of sheet metal products, blow pipes, ventilators, and similar goods. It is furnished with one pair of burring faces, one pair of turning faces, one pair of wiring faces, a gage, a wrench and heavy bench stand, or as a single-purpose machine with only one pair of rolls as desired.

Introduces New Portable Electric Tools

No. 101

Hisey-Wolf Machine Co., Cincinnati, recently has added to its line of portable electric machine tools, three new products, including a ¼-inch drill, a ½-inch drill and a 6-inch ¼-horsepower grinder. The grinder is shown in the accompanying illustration. The motors are mounted in ball bearings which are fitted in such a way as to eliminate slip and creeping action. The spindles are of liberal dimensions, hardened and ground where necessary. Brush holders with adjustable spring tension are mounted as a separate unit on a bakelite yoke. The general construction specifications in these new tools are the same as in the larger machines.

Machine Cuts Packing to a Correct Fit

No. 102

Chickasaw Machine & Foundry Co., Memphis, Tenn., has designed a machine for cutting packing of any size from ¼ to 1-inch to fit perfectly any size rod, stem or cylinder from ½ to 7 inches diameter without previous calculation and without waste of packing. As shown in the accompanying illustration, the dial is graduated to cut the correct length of any size packing to fit any size rod within its range. To set the machine, the stop at the right is moved until the line on the stop representing the size of packing coincides with the circular line on the dial representing the size of rod, then the nut in the center is tightened. About ¼-inch next is cut off the end of the coil of packing to make the bevel on one end. The beveled end is taken around the anvil and against the stop, then the packing held against the stop and against the anvil with the left hand, the knife lever is moved forward to make the cut. The knife is made from saw steel and is actuated by a rack and pinion with teeth cut from solid steel; the anvil or body is gray iron; and the dial is of etched brass.

No. 102—Machine for cutting packing

Iron Trade Review's Calendar of New Equipment

No.	Item	Builder	Comment	Date Described
77.	Electric motor	Wagner Electric Corp	Totally enclosed, air jacketed	March 22
78.	Slitting machine and coiler	Torrington Mfg. Co	Slits and coils simultaneously	March 22
79.	Flexible-shaft unit	Stow Mfg. Co	Direct, connected; overhead suspended	March 22
80.	Gasoline locomotive	H. K. Porter Co	New design; new type drive	March 22
81.	Cement gun	S. Obermayer Co.	Air operated; for refractories	March 29
82.	Universal iron worker	Buffalo Forge Co.	Larger size punch, shear and bar cutter	March 29
83.	Riveting machine	Hanna Engineering Works	Pneumatic; for chassis frames	March 29
84.	Riveting machine	Hanna Engineering Works	Pneumatic; for tractor wheels	March 29
85.	Swing-frame grinder	Norton Co.	For high-speed snagging work	March 29
86.	Electric arc welder	General Electric Co.	Combined with gasoline tractor	April 5
87.	Electric arc welder	Westinghouse Electric & Mfg. Co	Motor-driven; mounted on wheels	April 5
88.	Electric arc welder	Lincoln Electric Co.	Gasoline engine driven	April 5
89.	Diesel engine	Fairbanks, Morse & Co.	For drilling oil wells; portable	April 5
90.	Air filter	National Air Filter Co.	Unit type; uses new medium	April 5
91.	Grease cup	Hunter Pressed Steel Co.	Improved design; cadmium finish	April 5
92.	Gas producer fuel feed	Wellman-Seaver-Morgan Co.	Double-bell type; adjustable	April 5
93.	Across-the-line motor starter	Cutler-Hammer Mfg. Co.	Alternating current; gives full protection	April 12
94.	Magnetic switch	General Electric Co.	Places squirrel-cage motors across line	April 12
95.	Brinell testing machine	Brown Bayley's Steel Works Ltd.	Portable; operates on new principle	April 12
96.	Electric solenoid brakes	General Electric Co.	Models for alternating and direct-current	April 12
97.	Manhole cover	United Filters Corp.	Incorporates locking device	April 12
98.	Automatic rod magazine	Brown & Sharpe Mfg. Co.	Feeding device for automatic screw machines	April 19
99.	Portable conveyor	Link-Belt Co.	Light-weight; motor-driven	April 19
100.	Combination bench machine	Niagara Machine & Tool Works	Turns, wires and burrs sheet metal	April 19
101.	Portable electric tools	Hisey-Wolf Machine Co.	Two drills and bench grinder	April 19
102.	Packing cutter	Chickasaw Machine & Foundry Co.	Cuts fibrous packing to exact fit	April 19

Editorials

Low Earnings May Repel Recruits ***Campus and Shop Join Hands, Gain***
Even Courts Cannot Buck Lake Ice ***Price Alone Ought Not Get Orders***
Nonferrous Shipments Threaten Records

Can Steel Hold Men of Vision?

A VETERAN of the steel industry under examination in a government hearing, asked how he knew things to which he testified, exclaimed with fervor: "They are my business. It is my life."

Executives of the steel industry and junior executives who will succeed them have come to regard their business as their life in great degree. To them changes in the relative profits of steel will not be deterrents to following their chosen path. They have the atmosphere and will not turn back.

But what will be the reaction of those who might follow in the next generation of executives? Once railroads promised fame and money; coal mining until recently was a career for the ambitious to win fortune; other industrial lines once alluring have fallen by the wayside and no longer tempt. New paths to fortune have opened. The automotive builder now seems to be the child of fortune and other new avenues beckon.

On the showing of cold statistics that steel pays only 5.24 per cent on its investment while automobile building pays 28.05 per cent, will the ambitious young man entering business look coldly on steel and warmly on automobiles? Will an effect of this situation be to drawn the better and more ambitious minds to the latter, at the expense of the former?

Steel, once the synonym of fame and riches, must look to itself if it hopes to retain its place and claim its share of leaders and men of vision.

Industry Leaning Upon Universities

COLLEGES and universities not so many years ago were looked upon solely as the training ground for future business men. The link between institutions of learning and institutions of industry was a small one. Today, the relationship is particularly and happily close.

The need for engineering students to obtain practical problems for thesis investigation served as an opening wedge. Faculty members frequently were given consulting capacities by small plants lacking research facilities. Growing competition forced development of superior products and plant owners were confronted with more and more problems of a nature requiring solution in research laboratories. Technical colleges, particularly those supported by state funds, became so besieged with requests for assistance that engineering experiment stations were established.

Since the war these stations have solved many problems for industry. Furthermore, they have grown rapidly in size and service. According to a recent directory of research laboratories compiled by the bureau of standards, 186 colleges in the United States are engaged to a considerable extent in research work. A more recent activity of technical schools is the sponsoring of conferences on heat treating, welding, foundry practice, fuel utilization and similar subjects, for the benefit of state industries. And behind it all, but nevertheless important, is the fact that these institutions are making satisfied taxpayers.

Should Sue the Weather Man

THE government's suit at Cleveland against 20 Great Lakes steamship companies to force them to open the navigation season earlier than they had intended, and to close it later in the fall, should have named "the weather man" as co-defendant. Weather conditions were not favorable for opening the season April 15; in fact, ice in the upper lakes prohibited it. Therefore, the charge that the ship owners had agreed "unlawfully" to postpone the opening date to May 1 apparently did not take into consideration the most important factor—the weather. Great Lakes ship capacity is ample to handle all cargo demands in due season, without chasing out the boats to battle ice in the spring and storms in the fall. Such operation is hazardous, and it is questionable if an owner can be compelled to sail his vessel against his judgment.

It is to be noted that over 52 per cent of the

total amount paid as freight on cargo that passed through the canals at the Soo in 1927 came from the pockets of iron ore and iron and steel shippers. Grain carrying charges constituted less than 20 per cent. Freight charges per ton mile on all cargoes averaged 1.03 mills. The value of all freight was $1,131,000,000; the value of the steamers used for hauling the freight was over $250,000,000, while the total freight charges were $69,000,000. The average haul was 800 miles.

Iron ore and iron and steel made up 18 per cent of all freight handled; grain constituted 56 per cent. If it were not for the ore trade the grain carrying service could not be performed at anywhere near today's cost. Why should lives and property be risked to gain two extra weeks in the spring and fall?

"Fear Mindedness" Hits Profits

IN VOICING complaints of members concerning waning profits of the past year or more, President Routh of the Concrete Reinforcing Steel institute said recently that if everyone should decide upon a rigid policy of making a profit on every order taken vast improvement would accrue to the industry. The speaker made a plea for the reinforcing bar industry to dedicate itself to the principle of fair profits.

Other industries are being told substantially the same thing. Obviously, the responsibility is that of the executives who deal directly with competitors. A firm policy of taking only business that carries a profit will set in motion a more profitable cycle. But even more is required. A less panicky view of competition undoubtedly would bring forth more cool-headed price policies.

Mr. Routh believes the shrunken profits of the reinforcing bar industry have been brought about by the seller thinking that one case of sharp competition justifies a small loss. Thus price cuts are pyramided. The ability to face sharp competition with greater deliberation is needed.

Price No Clew to Metals Activity

SHIPMENTS of copper in the first quarter of 1928 were the largest ever made. Zinc and tin came within a narrow margin of their greatest records. Movement of lead also was large but exact figures are not yet known. In short, all the nonferrous metals have had tremendous business. Prices have not well indicated the comparative size of tonnages moving, because production also has been of record-breaking size.

The unprecedented business in copper has been better reflected in the price than has been the case with other metals. This metal is the only one that has been materially higher than last year. This improvement in prosperity, while highly important, is not an accurate reflection of domestic business conditions. The record was due to the heaviest exports of copper ever made. Domestic shipments were large but not of unusual size, as the copper wire industry was slack. Other divisions of copper consumption, particularly brass mill operations, seldom have been exceeded.

The tonnage of zinc included some exports but these were a minor factor and not of extraordinary size. Tin moved mostly in domestic deliveries. After a poor start this year it has lately become realized that tin consumption again is high.

What Our Readers Are Thinking

Biting the Hand That Feeds

To the Editor:

REFERRING to the editorial, "More Machinery Needed" in the April 5 issue of IRON TRADE REVIEW, it is a rather peculiar thing that loose thinking is still general on subjects in which the facts are ready at hand for anyone who wishes to investigate it. In other words, we would like to fool ourselves—there is no other way I know of to explain the non-sensical idea that labor is unemployed because of the fact that it is more efficient by the use of machinery.

We are perfectly sure in the case of the Pilgrim Fathers when they settled in Massachusetts the first year after coming over in the Mayflower, that whether they had enough to eat or not depended on the individual efforts of each and every person. The balance between starvation and life was extremely small and it only required the elimination of the efforts of a few of this company to have allowed it to disappear entirely.

This fact is fully understood by all, but for some reason when instead of having 100 citizens of the United States we have 100,000,000, we seem to think that the theory that what we have depends on what we do breaks down.

Perhaps if we reverse the process it might give us a new point of view. Let's suppose in this particular instance that all machinery of all kinds except that possessed by the Pilgrim Fathers in 1621, were eliminated—I wonder if we would then be fully employed or not, and if we were fully employed I wonder if we would have sufficient of this world's necessities so that life would be a possibility. I think it is safe to say that if all machinery were eliminated except that type of machinery which was possessed by the Pilgrim Fathers in 1621, that inside of 30 days at least 90 per cent of all the people in this country would be dead, or very close to that.

Probably we will never appreciate what this progress has meant to the comfort of each of us, but even if we cannot see our way clear to revere the memory of those who have made this progress and this comfort possible, at least we should be good enough sports to keep from biting the hand which feeds us.

J. L. LINCOLN, *Vice president.*

Lincoln Electric Co.,
Cleveland, April 6, 1928.

IRON TRADE REVIEW

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E. L. SHANER, Editor. *J. D. PEASE, Advertising Director.* *F. F. LIGHT, Circulation Manager.*

New Pipe Mills Have Novel Features. Page 1002.

A LARGE automobile manufacturing company is spending many thousands of dollars to tell the public of the fine distinction it is making in the use of alloy steels. It does not consider it sufficient to say "We use alloy steels," but explains how it uses the right kind of alloy steel for each specific purpose. This is only one of the many indications of the thought manufacturers generally are giving to alloy steel. An interesting discussion of the subject begins on page 1008. The reader cannot fail to be impressed by the tremendous importance of alloy steel in engineering developments.

The Readers' Page

CONTENTS

For April 19, 1928

SPECIAL ARTICLES

Heat Treating Aids in Maintaining "Power of Press"—By J. B. Nealey.. 997

Can Business Benefit from Principles of War?—By Robert E. Kinkead..... 1000

New Pipe Mills Have Novel Features—By George A. Richardson..... 1002

Czech Works, Modernized, Compete with Leading Makers—By Vincent Delport..... 1006

Alloy Steels Speed Industrial Progress—By B. D. Saklatwalla..... 1008

Digest of Machine Tools..... 1013

Editorials..... 1015

BUSINESS TREND

First Quarter Brings New Records—By John W. Hill..... 1018

Barometer of Business..... 1018
Machine Tool Orders..... 1019
Building Construction..... 1019
Steel Ingots..... 1020
Steel Bookings..... 1020
Commmercial Failures..... 1021
Railroad Earnings. 1021

MARKET REPORTS

Review of Markets..... 1022

Iron, Steel Prices..... 1022, 1023, 1024, 1027, 1037, 1056

Pig Iron..... 1025
Coke..... 1026
Ferroalloys..... 1026
Tin Plate..... 1026
Iron and Steel Scrap 1027
Nuts, Bolts, Rivets. 1028
Refractories..... 1028
Semifinished..... 1028
Plates..... 1029
Bars..... 1029
Pipe..... 1030
Sheets..... 1031
Structural Shapes. 1032
Reinforcing Bars... 1033
Railroad Equipment 1034
Cold Finished Steel 1035
Wire and Nails.... 1035
Strip Steel..... 1035
Nonferrous Metals. 1036
Coke By-Products. 1036
Warehouse Markets 1037
Pacific Coast Markets..... 1038
Iron Ore..... 1040
Foreign Markets... 1047
Machinery Markets 1051
Crane Inquiry and Awards..... 1051

GENERAL NEWS

Iron Ore Prices Reaffirmed..... 1040

Mirrors of Motordom..... 1041

Industrial Men in the Day's News—William LeRoy Emmet..... 1044

Here and There in Industry..... 1041
Men of Industry... 1045
News of Societies...1049
Obituary..... 1050
Construction and Enterprise..... 1052
Trade Publications 1055

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The Business Trend

First Quarter Brings New Records

By JOHN W. HILL, Financial Editor

INDUSTRIAL records for the first quarter of 1928 now coming to hand establish unmistakably that the period was one of the most active in the history of American business, for some important lines. These records make clear also the fact that the early months of the current year have brought definite improvement in general industry.

AMONG the basic lines to show large scale operations in March and in the first quarter are those of building construction, steel production, machine tools, and automobile output. The records of the steel and building industries have been exceptionally impressive. During March a next to the highest peak for all time in the production of steel ingots was reached when the daily average rate touched 166,945 tons.

THIS average was a neck behind the great top of 167,973 tons daily average of March, 1927. Production of ingots for the first quarter of the year was 12,544,156 tons or 1.28 per cent higher than the former greatest three months output in the first quarter of 1926.

THE record of building construction is even more striking. Large scale construction has been the rule of the last few years and each year brings forth a new crop of predictions that the building boom is near its end. That prediction was freely made in 1927, but it is being refuted.

DURING the first quarter of the year the value of new contract awards climbed 6 per cent above the total for the corresponding period of 1927, the preceding peak. The automobile industry, with Ford excluded, also has made a new high record. Including Ford's restricted output the March total of about 425,000 cars and trucks was the highest for any other March except in 1926.

WITH building and the automobile industry active, the steel trade has been under a powerful stimulus. So far there is no evidence that the impetus is diminishing and a good spring seems ahead. One result of the general recovery in industry has been the correction of the unemployment situation which existed last winter. Not all lines are sharing in the gains. But in the main the trend has been upward.

The Barometer of Business

INDUSTRIAL INDICATORS

	March	month ago	Year ago	Average 1913
Pig iron output (Daily average, tons)	103,493	99,471	112,300	83,900
Blast furnace index 60 per cent = normal	56	52.4	61.1	62.8
Unfilled orders (tons)	4,335,206	4,398,000	3,553,140	4,513,000
Ingot output (Daily average, tons)	166,945	160,591	166,633	.....
Dodge Bldg., awards in 37 states (sq. ft.)	88,090,000	68,847,400	87,891,700	.....
Automobile output	425,000	345,000	417,000	.....
Coal output, tons	44,116,000	41,290,000	60,200,000	39,869,000
Business failures; number	2,236	2,176	2,143	1,336
Business failures; liabilities	$54,814,145	$45,070,000	$57,890,905	$22,732,000
Cement production, Bbls.	10,223,000	8,785,000	11,452,000	7,704,000
Cotton consumption, bales	581,318	573,810	694,193	438,218
Car loadings (weekly average)	950,005	897,000	1,004,000	.....

FOREIGN TRADE

	March	Month ago	Year ago	Average 1913
Exports	$423,000,000	$373,000,000	$438,000,000	$194,000,000
Imports	$382,000,000	$353,000,000	$378,000,000	$149,900,000
Gold exports	$ 97,576,000	$ 25,776,000	$ 5,625,000	$ 5,234,000
Gold imports	$ 2,683,000	$ 14,686,000	$ 16,302,000	$ 5,900,000

FOREIGN EXCHANGE

	Normal	April 16	Month ago	Year ago
Sterling	$4.86	$4.87	$4.87	$4.85
Francs	19.3c	3.93c	3.93c	3.91c
Lira	5.26c	5.27c	5.27	4.54c
Marks	23.8c	23.90c	23.90	23.73c

FINANCIAL INDICATORS

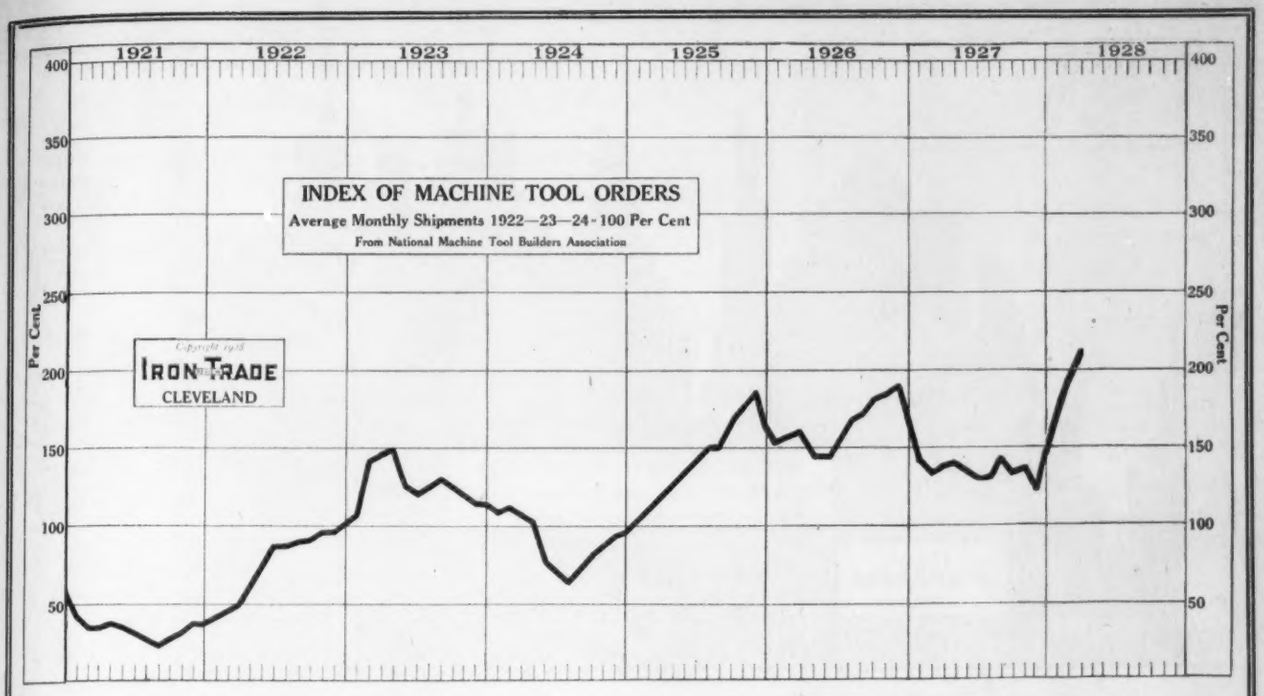
	March	month ago	Year ago	Monthly av-1913
25 industrial stocks	$268,88	$258,00	$201.99	$58.19
25 Rail stocks	$123.36	$120.00	$112.35	$82.90
40 Bonds	$93.46	$93.40	$91.54	$93.00
Bank clearings (000 omitted)	$55,491,000	$44,605,341	$48,947,281	$13,895,000
Commercial paper rate N. Y., per cent)	4¼-4½	4-4¼	4¼	5.60
*Commercial loans (000 omitted)	.....	8,731,419	8,696,334	.....
Federal Reserve ratio, per cent	74	74	78	.....
Railroad earnings	$67,000,000	$57,070,000	$70,045,000	$59,301,000
Stock sales, N. Y. stock exchange	84,973,869	47,009,070	49,211,663	6,924,000
Bond sales, par value	$317,019,000	$238,819,875	$310,759,100	$41,499,000

*Leading member banks Federal Reserve System.
**January, 1928.
†March 20, 1928.

COMMODITY PRICES

	April 1	Month ago	Year ago	1913
Iron Trade Review composite average of 14 iron and stel prices	$35.81	$35.91	.....	$26.32
Bradstreet's index	144	143.8	135	100
Economist's (British)	148	145	145	100
Wheat, cash (bushel)	1.74	1.60	1.34	92c
Corn, cash (bushel)	98c	98c	68c	51c
Petroleum, crude, (Bbl.)	2.65	2.80	2.90	2.50

The Business Trend

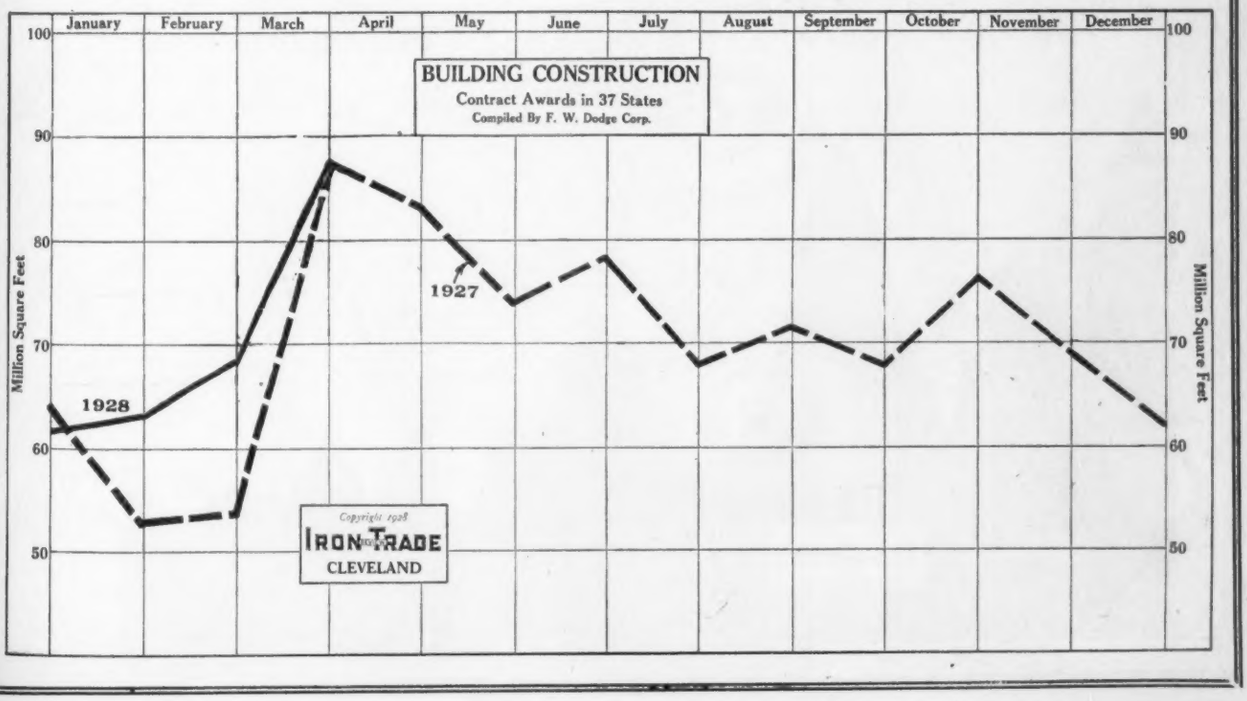


Machine Tool Orders

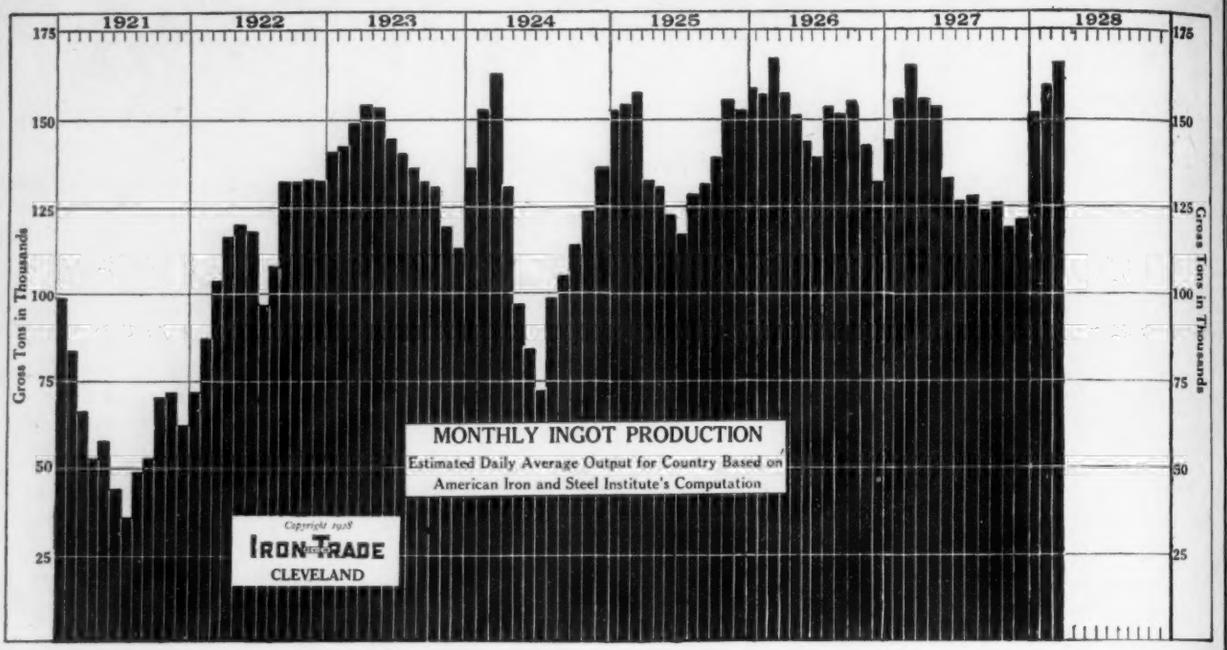
ORDERS for machine tools continue to increase. The three months' moving average of gross orders for January, February and March stood at 213. This compares with 196 for the previous month and it is highest of any time since early 1920. According to the National Machine Tool Builders association shipments for the month were again below the level of net orders. This is a favorable indication. Higher machine tool orders reflect increased industrial activities.

Building Construction

BUILDING construction awards in March attained a peak never before recorded in any month according to the computation of the F. W. Dodge Corp. covering 37 states. The grand total of contract awards for the month was 88,090,400 square feet compared with 68,847,400 square feet in Februanr and with 87,891,700 square feet in March, 1927. The high record of building activities is providing a stimulating factor for general business activities throughout the country.



The Business Trend

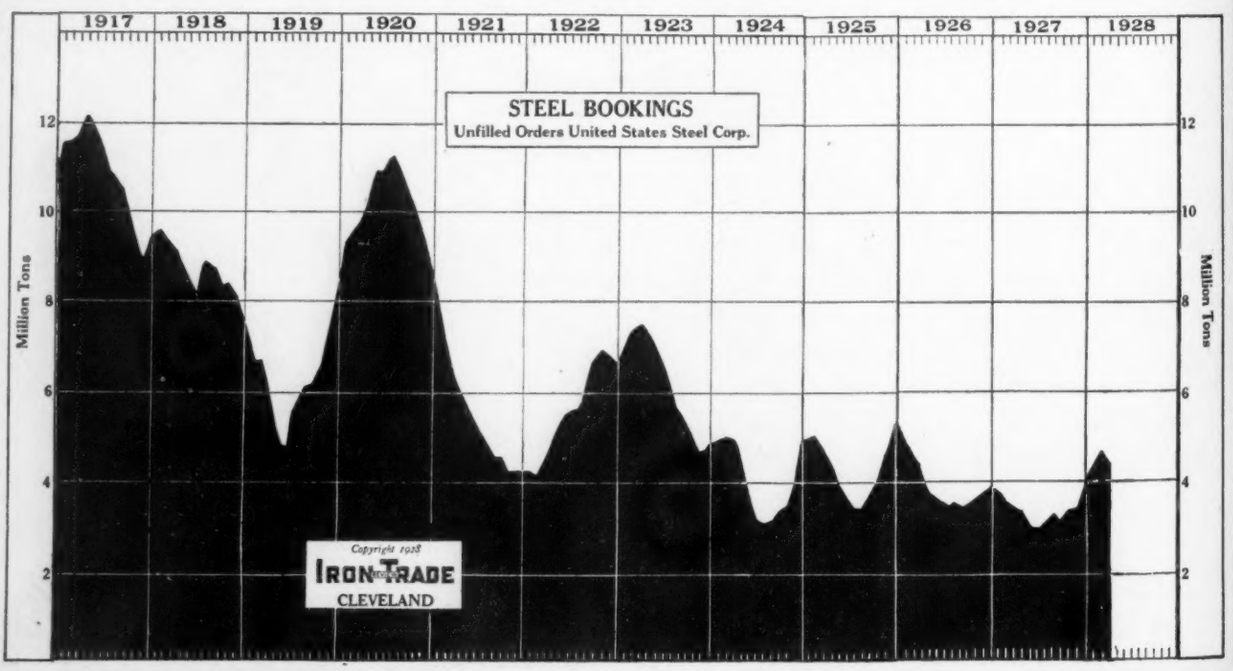


Steel Ingots

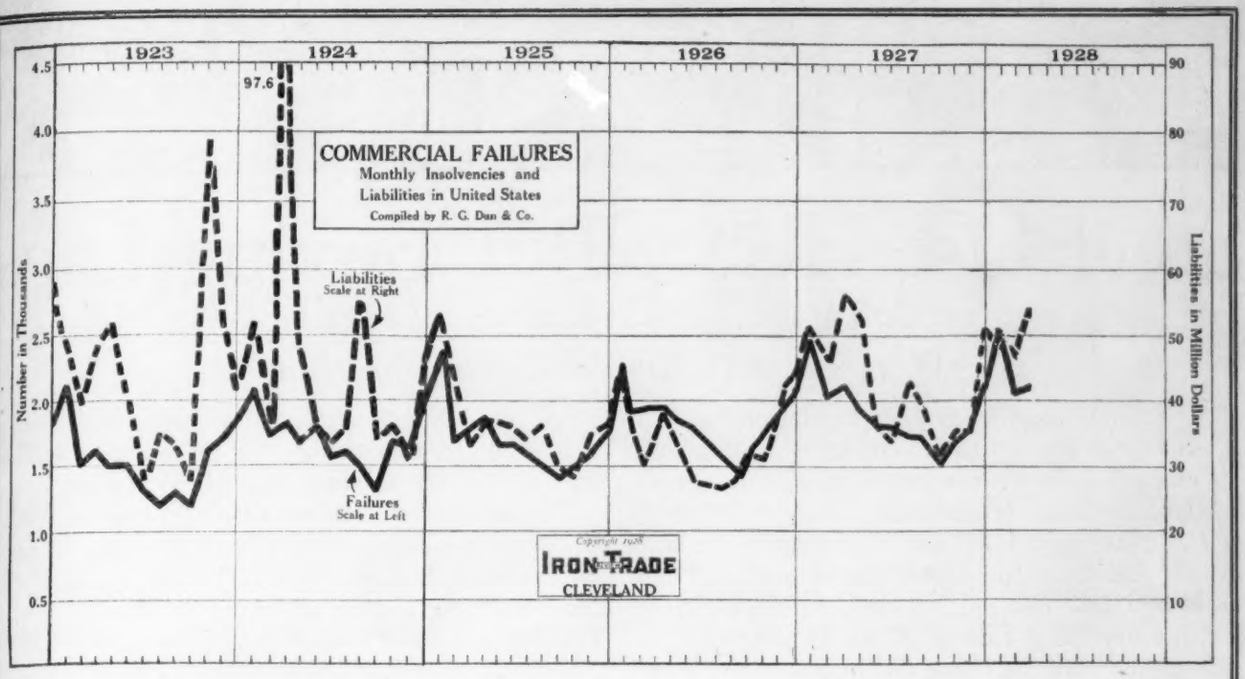
NEXT to the highest record for all time was reached in the production of ingots in March. The daily average output for the month was 166,945 tons compared with 160,591 tons in February and with 167,973 tons in March, 1927, the previous peak. Output for the quarter of 12,544,156 tons represents a gain of 4.18 per cent over the total for the corresponding period of 1927. The output for the first quarter this year established a new high record for any other quarter in history.

Unfilled Orders

UNFILLED orders of the United States Steel Corp. declined by 62,983 tons during March. The total at the close of the month was 4,335,206 tons compared with 4,398,189 tons one month before and 3,553,140 tons one year before. The level of orders as of March was 782,066 tons larger than twelve months ago. They were 1,285,000 tons greater than at the low point of 1927 reached at the end of May. The decline in March was less than expected due to the record-breaking production.



The Business Trend

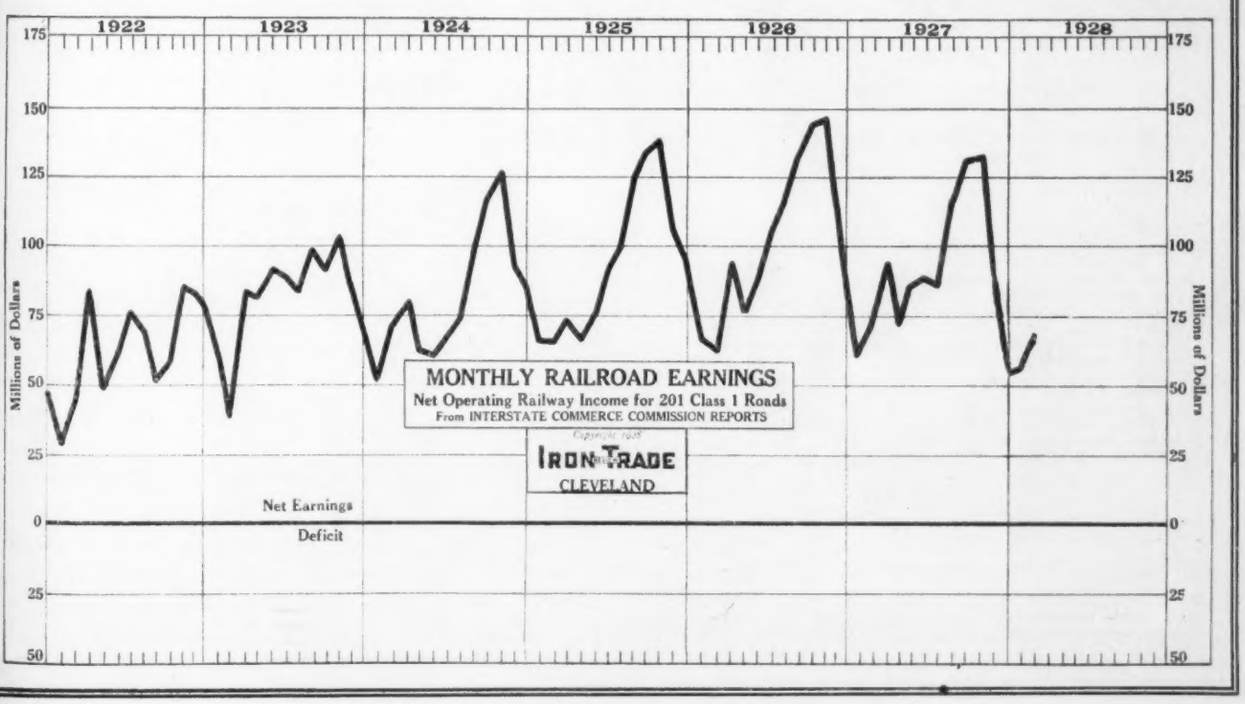


Commercial Failures

DURING March there were 2236 commercial failures in the country compared with 2142 for the like period of 1927. The gain this year was 4.3 per cent. Indebtedness involved in insolvencies of last month amounted to $54,814,145, or 5.3 per cent below the total of $57,890,905 of one year before. The number of insolvencies in the first quarter of the year were 6.2 per cent above the total for the same months of 1927. The increase is a reflection of slackened business late in 1927.

Railroad Earnings

THE net operating income of Class I railroads in February amounted to $70,064,223. This was at the annual rate of returns of 4.79 per cent on the property investments of the roads. In February, 1927 the net railway operating income was $69,516,412 or 4.89 per cent on property investment. Roads operating revenues for the month of February amounted to $456,593,283 compared with $469,565,403 in February, 1927 or a decrease of 2.8 per cent.



Steel Use Heavy But Buying Lags

Iron Ore Prices Unchanged as Ford Covers—Sheets and Nails Weak—Pipe is Firmer—Little Iron Sold

FINISHED steel is moving to consumers at a rate that promises to make April substantially as good a production month as March. Specifications for some products have wavered slightly in the past week but in the aggregate are sufficient, combined with material ordered out late in March but not yet shipped, to maintain an average operating rate of 82 to 84 per cent.

Whether this gait can be maintained beyond the end of April hinges upon the inflow of new business the next ten days. Orders have been decidedly light, in contrast with production and consumption. Unsettled prices, the beginning of a new quarter and the tendency of fresh commitments to concentrate in the closing days of the month account for this condition. Certainly sentiment continues confident.

Unsettled Prices Make Buyers Cautious

Undoubtedly the price situation has been a deterrent. Heavy steel seems to have settled to the basis of 1.85c, Pittsburgh, and 2.00c, Chicago, and users face no hazard in holding off. Following the $3 reduction last week in autobody sheets, other sheet grades have lost ground rapidly. On large purchases of strip, automotive buyers have forced sharp concessions. Pig iron prices have lacked strength in some districts.

It may be that reaffirmation of prices on Lake Superior iron ore coincident with the largest purchase in its history by the Ford Motor Co. will have a strengthening effect. The Ford company has placed 435,000 tons at the prices governing for four years and fully 500,000 tons more is involved in transactions now being closed.

Large Producers' Position Best

The preponderance of heavy products supports both the Pittsburgh and Chicago districts on a firmer basis than the Mahoning valley, where volume has been neutralized by softness in sheet and strip quotations. Chicago mills, at 95 per cent, are going stronger than a year ago. Large producers in the Pittsburgh district hold at 85 per cent. Steel corporation subsidiaries, averaging 88 to 90 per cent, are in relatively better position than most independents.

Automotive demand for steel bars is unabated at Pittsburgh and Chicago, where specifications slightly outrun shipments. Oil country demand

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	April 18, 1928	Mar. 1928	Jan. 1928	Apr. 1927
PIG IRON				
Bessemer, del. Pittsburgh	$19.26	19.21	19.26	21.26
Basic, valley	17.00	17.00	17.00	19.00
Basic, eastern, del. eastern Pa.	19.25	19.50	19.50	20.90
*No. 2 foundry, del. Pittsburgh	19.01	19.01	19.01	20.26
No. 2 foundry, Chicago	18.50	18.50	18.50	20.00
*Southern No. 2 Birmingham	16.00	16.00	16.00	18.00
*Southern Ohio, No. 2 Ironton	19.00	19.00	19.00	20.00
**No. 2X, Virginia furnace	20.50	20.50	20.50	22.00
**No. 2X, eastern, del. Phila.	21.26	21.26	20.51	22.26
Malleable, valley	17.25	17.25	17.25	18.50
Malleable, Chicago	18.50	18.50	18.50	20.00
Lake Superior charcoal del. Chicago	27.04	27.04	27.04	27.04
Gray forge, val., del. Pittsburgh	18.51	18.51	18.51	19.76
Ferromanganese, del. Pittsburgh	104.79	104.79	104.79	104.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	2.60	2.60	2.70	3.20
Connellsville, foundry ovens	3.60	3.75	3.75	4.05
SEMIFINISHED MATERIAL				
Sheet bars open-hearth, Youngstown	32.50	33.75	34.00	34.25
Sheet bars, open-hearth, Pittsburgh	34.00	33.70	34.00	33.75
Billets, open-hearth, Pittsburgh	33.00	33.00	33.00	33.50
Wire rods, Pittsburgh	44.00	44.00	41.50	42.50

	April 18, 1928	Mar. 1928	Jan. 1928	Apr. 1927
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.85	1.90	1.80	1.90
Steel bars, Chicago	2.00	2.00	1.90	2.00
Steel bars, Philadelphia	2.17	2.17	2.12	2.22
Iron bars, Chicago	2.00	2.00	1.90	2.00
Shapes, Pittsburgh	1.85	1.90	1.80	1.90
Shapes, Philadelphia	2.07	2.08	2.08	2.12
Shapes, Chicago	2.00	2.00	1.90	2.00
Tank plates, Pittsburgh	1.85	1.90	1.80	1.85
Tank plates, Philadelphia	2.10	2.10	2.05	2.22
Tank plates, Chicago	2.00	2.00	1.90	2.00
Sheets, black, No. 24, Pittsburgh	2.75	2.85	2.80	2.80
Sheets, blue anl., No. 10, Pittsburgh	2.00	2.10	2.10	2.20
Sheets, gal., No. 24, Pittsburgh	3.65	3.75	3.65	3.65
Sheets, black, No. 24, Chicago	3.05	3.05	3.05	3.00
Sheets, blue anl., No. 10, Chicago	2.25	2.25	2.25	2.40
Sheets, galvanized, No. 24, Chicago	3.90	3.90	3.90	3.90
Plain wire, Pittsburgh	2.50	2.50	2.40	2.40
Wire nails, Pittsburgh	2.55	2.65	2.50	2.55
Tin plate, per base box, Pittsburgh	5.25	5.25	5.25	5.50
SCRAP				
Heavy melting steel, Pittsburgh	15.00	14.75	15.35	16.50
Heavy melting steel, eastern Pa.	14.00	13.75	14.00	14.75
Heavy melting steel, Chicago	12.75	12.75	12.25	13.10
No. 1 wrought, eastern Pa.	15.25	15.25	15.25	16.75
No. 1 wrought, Chicago	12.30	12.45	12.65	13.50
Rails for rolling, Chicago	14.00	14.45	15.00	15.85

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

STEEL PLATES

Pittsburgh	1.85c to 1.90c
Philadelphia, del.	2.10c to 2.15c
New York, del.	2.175c to 2.225c
Boston, del.	2.265c to 2.415c
Chicago	2.00c
Cleveland	2.04c to 2.09c
Buffalo	2.00c
Coatesville, Sparrows Point	2.05c
Birmingham	2.05c
Pacific coast, c.i.f.	2.25c to 2.30c

STRUCTURAL SHAPES

Pittsburgh	1.85c to 1.90c
Philadelphia, del.	2.07c to 2.18c
New York, del.	2.14c to 2.19c
Boston, del.	2.265c to 2.415c
Chicago	2.00c
Cleveland, del.	2.04c to 2.09c
Buffalo	2.00c
Bethlehem	2.05c
Birmingham	2.05c
Pacific coast, c.i.f.	2.35c

BARS

SOFT STEEL

Pittsburgh	1.85c to 1.90c
Chicago	2.00c
Birmingham	2.05c
Buffalo	2.00c
San Francisco	2.35c
Cleveland mill	1.85c to 1.90c
Cleveland delivered	1.87½c and 2.09c
Philadelphia delivered	2.17c
New York delivered	2.19c
Boston delivered	2.265c to 2.415c
Pittsburgh, cold finishing	2.00c to 2.05c
Pittsburgh, forging quality	2.10c to 2.15c

RAIL STEEL

Chicago	1.85c
Eastern mills	1.65c to 1.75c

IRON

Chicago	2.00c
New York delivered	2.14c to 2.24c
Philadelphia delivered	2.12c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet	1.85c to 1.90c
Chicago, billet	2.30c to 2.75c
Chicago, rail steel	1.85c to 1.95c
Youngstown, billet	1.90c to 2.00c

COLD FINISHED STEEL

Cold finished steel bars, drawn or rolled, Pitts., Chi., c.l.	2.20c
Shafting (turned, polished) Pittsburgh	2.20c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.45c to 2.90c
Cold finished steel bars, Cleve.	2.25c

TIN AND TERNE PLATE

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.25

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24	4.10c

*Prices subject to quantity differentials.

SHEETS

SHEET MILL BLACK

No. 24, Pittsburgh base	2.75c to 2.85c
No. 24, Philadelphia delivered	3.07c to 3.22c
No. 24, Gary, Indiana Harbor	3.00c
No. 24, Chicago, delivered	3.05c
No. 24, Birmingham, base	3.05c

TIN MILL BLACK

No. 28, Pittsburgh, base	2.90c to 3.00c
No. 28, Gary, base	3.00c to 3.10c

GALVANIZED

No. 24, Pitstburgh, base	3.60c to 3.75c
No. 24, Philadelphia, delivered	3.92c to 4.07c
No. 24, Gary, Indiana Harbor	3.85c
No. 24, Chicago, delivered	3.90c
No. 24, Birmingham, base	3.90c

BLUE ANNEALED

No. 10, Pittsburgh base*	2.00c to 2.10c
No. 10, Philadelphia, delivered	2.32c to 2.42c
No. 10, Gary, Indiana Harbor	2.20c to 2.30c
No. 10, Chicago, delivered	2.25c to 2.35c
No. 10. Birmingham, base	2.25c

*Plus 10 cents for 40 inches or wider.

AUTOMOBILE

No. 20, Pittsburgh base	4.00c

IRON

No. 10, Pitts., blue ann., c.l.	2.80c
No. 24, Pitts., box annealed, 1-pass cold rolled, carload	3.75c
No. 24, Pitts., gal., c.l.	4.85c

(Turn to the following page)

for tanks and fabricated plate work, of which 20,000 tons for West Texas is pending, features plates. Structural steel fabricators' specifications for plain material are expected to reflect heavier building awards.

Sheets are as strong in production as they are weak in price. March sales of independent makers, at 399,441 tons, were the heaviest since December and compared with only 345,900 tons last March. Production of 366,127 tons in March topped monthly figures for over a year. But with the surrender of $3 per ton on the autobody grade the retreat in prices has been precipitate. The extreme lows this week emanate from the Mahoning valley, with 1.95c, Pittsburgh, on blue, 2.70c on black and 3.60c on galvanized reported. Much current business is higher priced, but in some districts buyers seek contract revisions.

Bad Weather Cuts Wire Product Sales

Some important makers of wire nails are extending the first quarter price of $2.55, Pittsburgh-Cleveland. Adverse weather the past week has retarded wire product sales in farm areas.

Hot strip prices are easier, even on small sales, and less than 1.85c, Pittsburgh, has been done by large automotive interests. Distribution of parts and body orders by Ford and Chrysler has stimulated both strip and sheet sales at Detroit. Specifications for cold finished bars have dropped.

Jobbers having been allowed by the producers an entire month's quota prior to the recent advance in pipe taking effect, merchant pipe specifications have expanded. Line pipe tonnage, however, is down to the low level of a year ago. Cast iron pipe prices are firmer in all districts. Detroit takes bids soon on 12,000 tons.

Bridge, highway and railroad work marks structural activity. A 12,000-ton bridge at Charleston, S. C., is up, while awards include 5000 tons for New York subways and 3500 tons for a Butler, Pa., steel plant. A 4000-ton reinforcing bar contract has been placed at Chicago.

Western Carriers Buying Fastenings

Track fastening sales at Chicago the past week totaled 14,000 tons, with inquiry for 5000 tons. Rail buying is light in all districts.

Fifteen thousand tons of gray forge iron was closed recently by a Pittsburgh district user at $16.75, valley. Spot sales of pig iron are more numerous at Chicago. St. Louis reports a decided increase in the melt. Shipments rather than sales are stressed at Cleveland.

Beehive coke prices are off, with spot sales of the furnace grade at $2.60 to $2.75 and users pressing for $2.50. Beehive foundry coke is in better demand in an easier market at $3.60 to $4.25. Coke oven operators claim the so-called outlaw strike of miners is abortive.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (April 18, 1928)	**$35.56**
Last week (April 11, 1928)	**35.77**
One month ago (March, 1928)	**35.81**
Three months ago (January, 1928)	**35.27**
One year ago (April, 1927)	**36.73**
Ten years ago (April, 1918)	**56.59**
Fifteen years ago (April, 1913)	**27.74**

Weakness in sheets and nails principally has sent the IRON TRADE REVIEW composite of fourteen leading iron and steel products down 21 cents this week, to $35.56, the lowest point since February.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED
SEE ALSO PRECEDING PAGE

HOOPS, BANDS, STRIP

Hot strip, under 3-inch, Pitts.	2.15c to 2.40c
Hot strip, 3 to 6-inch, Pitts.	2.05c to 2.20c
Hot strip, 6 to 12-inch, Pitts.	1.90c to 2.00c
Hot rolled strip, 12 to 24-inch 16 gage and heavier, coils or cut lengths 1.85c plate basis, or 2.00c blue annealed basis, plate or sheet extras.	
Hot strip, under 3-in., Chi.	2.30c to 2.50c
Hot strip, 3 to 6-in., Chi.	2.20c to 2.30c
Hot strip, 6 to 12-in., Chi.	2.00c to 2.10c
Hot strip, 12 to 24-in., Chi.	1.95c plate base
Cold rolled strip, hard coils, 1½ inches and wider by 0.100-inch and heavier base, Pitts., Cleve., (over 3 tons)	2.75c to 2.90c
Worcester, Mass.	3.05c

ALLOY STEEL

Hot Rolled
F.o.b. Pitsburgh or Cleveland
Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net price 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.00	3.65
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250	0.25	2.90

TUBING

BOILER

Carload Discounts—Less-carloads 4 points Lower—F.o.b. Pittsburgh Mills

Steel 3⅛ to 3¾-inch	42½
Charcoal iron, 3⅛ to 4½-inch	9
Seamless hot rolled 3⅛ to 3½-inch	46

Further discounts of five to seven 5 per cents for carloads on lap welded steel. On seamless hot rolled several more 5 per cents, and on charcoal from one 10 per cent to two 10 and one 5 per cents.

COLD DRAWN SEAMLESS

F.o.b. mill in desirable quantities
Random lengths over 5 ft.....55 per cent
Selected lengths, 1 to 18 ft.....53 per cent

WIRE PRODUCTS

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base.
Dealers 5 cents per 100 pounds extra

Bright plain wire, No. 9 gage	2.50c
Annealed fence wire	2.65c
Galvanized wire, No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
	Per 100 lbs.
Wire nails	$2.55 to 2.65
Galvanized nails	4.55 to 4.65
Polished staples	3.00 to 3.10
Galvanized staples	3.25 to 3.35
Coated nails, 100 lb. kegs, Sept. 1, 1926 extras apply	2.55 to 2.65
Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts.	$20.03

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Cleveland-Pittsburgh base on products made there; Duluth $2 higher, Worcester, Mass., and Fairfield, Ala., $3 higher.

CAST IRON WATER PIPE

Prices per net ton
Class B Pipe

Six-inch and over, Birming'm	$30.00 to 31.00
Four-inch, Birmingham	34.00 to 35.00
Four-inch, Chicago	42.20 to 44.20
Six-inch to 24-inch, Chicago	38.20 to 40.20
Four-inch, New York	40.50 to 41.85
Six-inch and over, New York	37.25 to 38.25
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.
Class A pipe is $4 higher than Class B.

IRON AND STEEL PIPE

Base Discounts Pittsburgh and Lorain, O., to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel*	62	50½
1 to 1½-inch butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less, Chicago del., 2½ points less.

*To large jobbers these discounts are increased on black by 1 point and a supplementary discount of 5 per cent; on galvanized by 1½ points with a supplementary 5 per cent.

CHAIN, PILING, CUT NAILS

Cut nails, c.l., f.o.b. mills	2.80c
Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.35c

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relaying rails, St. Louis	$24.00 to 31.00
Relay, rails, Pitts. 60 to 90 lb.	$27.00 to 30.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., stand.	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	$43.00

BOLTS AND NUTS

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.
Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.
Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	70 off

Rolled thread ⅝x6 and smaller take 10 per cent lower list.

Eagle list	70 off

MACHINE BOLTS

All sizes, cut thread	70 off

Rolled thread ⅝x6 and smaller take 10 per cent lower list.

Lag screws	70 off
Plow bolts, Nos. 1-2-3-7 heads	70 off
Tap bolts	70 off
Blank bolts	70 off
Stud bolts without nuts	70 off

Stove bolts, 75, 20, 10 and 5 off in pkgs. 75, 20, 10 and 5 with 2½ off in bulk.

Tire bolts	60-5 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	80-10-10 off
Upset 1-in. diam. and smaller	85-5 off

SQUARE HEAD SET SCREWS

Milled	80-10 off
Upset 1-in. diam and smaller	80-10-10 off

RIVETS

Struct., c.l., Pitts.-Cleve.	2.90c
Structural, c.l., Chicago	3.00c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

WASHERS

Wrought, c.l., Pitts. dist.	$6.75 off
Wrought, c.l., Chicago dist.	$6.70 to 6.90 off
Lock: To dealers	85-5 off
Lock: To consumers	85 off

Raw Materials and Semifinished Products

SEMIFINISHED MATERIAL

Prices per gross ton

BILLETS AND BLOOMS
4 x 4-inch base

Pittsburgh, open-hearth	$33.00
Pittsburgh, bessemer	33.00
Youngstown	33.00
Cleveland	33.00
Philadelphia	38.30
Chicago	34.00
Forging, Chicago	39.00 to 43.00
Forging, Pittsburgh	38.00
Forging, Philadelphia	43.30

SHEET BARS

Pittsburgh	34.00
Youngstown	32.50 to 33.00
Cleveland	32.50 to 33.00
Chicago	35.00

SLABS

Pitts., Young., and Cleve.	$33.00

WIRE RODS

Pittsburgh, Cleveland	$44.00
Chicago	45.00

SKELP

All grades, Pittsburgh	1.85c to 1.90c

IRON ORE

LAKE SUPERIOR ORES
Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%.	$4.55
Mesabi bessemer, 51½%.	4.40
Old range bessemer, 51½%.	4.40
Mesabi nonbessemer, 51½%.	4.25

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 58-63%.	8.00 to 8.50
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN IRON ORE
Cents per unit, alongside docks, Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-8% manganese	10.00 to 10.50
North African low phosphorus	nominal
Swedish foundry or basic, 65%.	9.00 to 9.50
Spanish and North African basic, 50 to 60 per cent.	8.50 to 9.00
Newfoundland foundry, 55%.	9.00 to 9.50

MANGANESE ORE

Prices do not include duty of 1 cent per pound of metallic manganese contained.

Brazilian	36 to 38 cents
Indian	36 to 38 cents
Caucasian, 53 to 55 per cent	

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton.	$14.50 to 15.00
Washed gravel, imported duty paid, east. tidewater, net ton	15.00 to 16.38

REFRACTORIES

FIRE CLAY BRICK
Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	51.00

MAGNESITE BRICK
Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base	
Dead-burned grain magnesite	40.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base	
9 x 4½ x 2½	45.00

Pig Iron

Market in Between Two Buying Movements —Shipping Instructions Show Melt Is Broadening—Prices Are Steady.

SHIPMENTS of pig iron are continuing at the high rate noted in March, and in some instances are exceeding it. Large consumption by the automobile industry is a feature of the present situation, while melters in other lines are showing more interest in requirements. Most of the second quarter business has been placed, and the attention of makers is centered on shipments. The market is in between two buying movements, with current orders limited to small lots. Pipemakers recently closed quietly for some heavy tonnages, as disclosed at Pittsburgh. Chicago furnaces have booked more orders for third quarter. Sales at St. Louis in the past week totaled 12,000 tons, of which the local maker took 10,000 tons in one lot. Prices in general are steady.

PITTSBURGH, April 17.—Only a limited amount of small-lot buying is noted in the pig iron market. Business usually is closed quietly between principals, often with reciprocal features. A few sellers report disposal of several hundred tons of foundry and malleable iron in the past week at $17.25, base ,valley. One buyer of malleable paid $17.50 to a middle interest which placed the business at $17.25. Two sellers of bessemer collected several orders for single carloads or 100-ton lots at $17.50, valley. A steelworks sold a single carload at $18, valley. It develops that a local pipemaker's gray forge business for second quarter, approximating 15,000 tons, was closed three weeks ago at $16.75, valley, with a source that supplied it prior to the first quarter. The latter interest still is shipping against a relatively small carryover and has sold this buyer's bessemer requirements for second quarter at $17.50, valley. Small lots of low phosphorus iron have been sold by the representative of an eastern furnace at $23, on a $5.50 freight rate. The valley merchant stacks' price is unchanged at $27, valley.

Boston, April 17.—Pig iron consumption has improved, indicating better buying in the near future. Buffalo iron still is $16, base, furnace, and it is reported that the same figure has been quoted for No. 2X on desirable tonnage.

New York, April 17.—Pig iron is quiet. Worthington Pump & Machinery Corp. last week completed purchases on its recent inquiries. It bought altogether about 1200 tons for second quarter shipment to its eastern and western plants. A tonnage of low phosphorus iron has been placed. New York Air Brake Co., which recently withdrew an inquiry for 500 tons of charcoal iron, now is inquiring for a carload of low phosphorus. Prices are unchanged.

Hudson Valley Coke & Products Corp., which was expected to blow in its furnaces at Troy, N. Y., about April 15, has made no decision when this stack will become active.

Buffalo, April 17.—The first half of this month has developed no major pig iron sales or inquiry. Producers believe foundry business will have to pick up to lay the foundation for additional second quarter orders. There has been no inquiry to test the reported firmness of Buffalo prices. Operation is steady, with 12 furnaces in blast.

Cleveland, April 17.—About 85 per cent of second quarter pig iron requirements of melters depending on furnace interests here are covered, and current sales now are limited to moderate size lots for early delivery. The total of sales in the past week was 18,000 tons, compared with 27,000 tons in the week preceding, and 66,000 tons in the week before that. Inquiries are light. The market is steady at $18, base, furnace, for local delivery, and $16.75 to $17 for outside shipment. Shipments from lake furnaces are holding up, and some melters are increasing their operations.

Pig Iron Prices

Per Gross ton

Bessemer, valley furnace	$17.50
Bessemer, del., Pittsburgh	19.26
Basic, valley furnace	17.00
Basic, del., Pittsburgh	18.13 to 18.76
Basic, Buffalo furnace	17.00
Basic, del., eastern Pa.	19.25 to 20.25
Malleable, valley furnace	17.25
Malleable, del. Pittsburgh	19.01
Malleable, del. Cleveland	18.50
Malleable, Chicago furnace	18.50
Malleable, Buffalo furnace	17.50
Malleable, del. eastern Pa	20.00 to 21.00
No. 1 foundry, Chicago furnace	19.00
No. 1X, eastern del., Phila.	21.76
No. 1X, Buffalo furnace	18.50
No. 2 foundry, valley furnace	17.25
No. 2 foundry, del., Pittsburgh	19.01
No. 2 fdy., Everett, Mass., fur.	19.00 to 21.00
No. 2 foundry, Buffalo furnace	17.00
No. 2 foundry, Chicago furnace	18.50
No. 2 foundry, Granite City	19.50
No. 2 foundry, Ironton furnace	19.00
No. 2 foundry, del. Cleveland	18.50
No. 2 foundry, del. Phila.	20.76
No. 2 Virginia furnace	20.00 to 20.50
No. 2 foundry, N. J., tidewater	19.78 to 21.76
No. 2 foundry, east N. Y. fur.	18.00
No. 2 Alabama, Birmingham	16.00
No. 2 Alabama, del. Cincinnati	19.69
No. 2 Tenn., Birmingham base	16.00
No. 2 Tenn., del., Cincinnati	19.69
No. 2 Alabama, del. Chicago	22.01
No. 2 Ala., del. Chicago, river-rail	20.18
No. 2 Alabama, del. Cleveland	22.01
No. 2 Alabama, del. St. Louis	20.42
No. 2X, east. N. J., tidewater	20.28 to 21.26
No. 2X, eastern, del. Phila.	21.26
No. 2X, foundry, Buffalo furnace	17.50
No. 2X, eastern, del. Boston	23.15 to 23.65
No. 2X, Virginia furnace	20.50 to 21.00
Gray forge, val., del., Pittsburgh	18.51 to 18.76
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.76 to 27.29
Low phos. copper bearing fur.	23.00 to 23.50
Charcoal, Birmingham	28.00
Charcoal, Superior, del. Chicago	27.04

Silvery iron, Jackson county (Ohio) furnace, in per cents: 5—$22; 6—$23; 7—$24; 8—$25; 9—$26; 10—$28; 11—$30; 12—$32; 13—$34.

Bessemer ferrosilicon, Jackson county (Ohio) furnace, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$40.50; 16—$43.

Chicago, April 17.—Spot buying of pig iron for nearby shipment is active, and sales outnumber the forward transactions. Several large users have covered for part or all of third quarter requirements. Few inquiries are appearing in the open market. The first cargo of boat iron from Buffalo is due May 1. The aggregate tonnage is far below last year. A moderate tonnage of silvery iron is reported sold in this district at a concession of 50 cents from the regular schedule. Foundry iron is $18.50, base, furnace, for nearby and forward buying.

Cincinnati, April 17.—Pig iron sales and inquiries are small. One dealer booked around 1000 tons in the past week, and another firm reports taking over 1000 tons in small lots. It is understood the Peerless Stove Co.'s inquiry from Louisville, Ky., for 1000 tons of foundry iron was cut in half, and 500 tons went to the Rockwood furnace.

St. Louis, April 17.—Demand for pig iron in this district continues active. Sales in the past several days total 12,000 tons, including all grades. Some irregularity is reported in the melt, but the average in the second week in April was slightly above that of all March. Heaviest tonnages are being accounted for by radiator, stove, farm implement and automobile interests. Some jobbing plants report better business, and architectural iron shops have booked a fair volume of orders. The St. Louis Coke & Gas Corp. sold approximately 10,000 tons, half to a manufacturer of heating apparatus for its Illinois plants. Quincy melters took an aggregate of 1000 tons, and 600 tons went to a specialty maker in this district. A nearby Illinois malleable shop purchased 1000 tons. Sales of southern iron approximated 1000 tons. Generally there is little resistance to prices. Books for third quarter are opened, with substantially the same prices as have applied since the middle of March.

Birmingham, Ala., April 17.—Small-lot buying of foundry iron continues, deliveries are fairly active, and production is being maintained. The price is firm at $16, base, Birming-

(*Concluded on Page* 1039)

Coke

Beehive Furnace Fuel Easier—Foundry Movement Accelerated—Coal Miners Strike Fails.

BEEHIVE coke prices are easier, spot sales being noted at $2.60 to $2.75. Efforts made to obtain $2.50 so far have been unsuccessful. The movement of beehive foundry coke has been stimulated by low prices, the usual range being $3.75 to $4.25, although occasional sales are noted at $3.60. Operators claim that less than 1000 coal miners responded to the strike call this week.

Pittsburgh, April 17.—Sellers of beehive coke find present prospects exceedingly meager. The price structure is slightly weaker. One valley merchant stack, contemplating going into blast May 1 or 15, has been offered coke below $2.75. This apparently is maximum for second quarter furnace coke contracts, as less than that was paid by at least two furnace interests now operating. One that formerly purchased coal to make its own beehive coke has shut down its ovens, suspending coal shipments, after making a deal with a Connellsville coke shipper whose affiliated pipe interest bought gray forge iron for second quarter. Spot sales are noted at $2.60 to $2.75. Because heating coke is offered at $2.25, buyers of standard coke are making strong efforts to obtain $2.50, but unsucessfully. The movement of foundry coke is slightly accelerated because lower figures offered by sellers stimulated buying. In a few directions shipments on contracts slowed down slightly. The usual price range is $3.75 to $4.25. Some coke occasionally is available at $3.60, while some shippers still are asking $4.50 to $4.75. Premium brands still bring $5.10 to $5.35.

The so-called outlaw coal strike in the Connellsville district apparently is fizzling out. A labor committee claims 10,000 men are out in the open shop fields of Westmoreland, Fayette, Somerset and Green counties. Operators, however, say the number is less than one-tenth of that, at the same time admitting the possibility of the number growing as evidence is furnished the men that relief measures are given, even better than those guaranteed the striking members of the United Mine Workers.

Production of coke in the Connellsville region for the week ended April 7 was 72,500 tons, compared with 70,570 tons the preceding week, according to the *Connellsville Courier*.

Boston, April 17.—Mild weather has kept down demand for domestic coke. Foundries are slow in ordering. Some reports of an increase in melt seem to indicate a better demand in the near future.

Cincinnati, April 17.—By-product coke dealers report much better business, stronger movement and larger specifications for the foundry grades. Automobile manufacturers especially are active. Prices are steady.

St. Louis, April 17.—Specifying on metallurgical coke is slightly less active, though the movement holds at about the same level as at the end of March. Operations at certain foundries have been curtailed. By-product coke output has been reduced slightly. Shipments of industrial coke continue heavy.

Birmingham, Ala., April 17.—Independent coke producers are enjoying a fairly good market. Prices are steady.

Coke Prices

Beehive Ovens	
Prices per Net Ton	
Connellsville furnace	$2.60 to 2.75
Connellsville foundry	3.60 to 4.20
New River foundry	7.00 to 8.00
New River furnace	6.00
Wise county, foundry	5.00 to 5.50
Wise county furnace	4.50 to 5.00
Alabama foundry	5.00
By-Product Foundry	
Newark, N. J., del	9.00 to 9.40
Chicago, ovens	9.00
New England, del	11.00
St. Louis	9.00
Birmingham	3.50 to 4.50
Indianapolis, del.	8.75
Ashland, Ky.	7.00
Portsmouth, O.	7.00
Detroit, ovens	9.00
Buffalo, ovens	8.50 and 9.00

Ferroalloys

Specifications for Month Parallel Those of March—Small Purchase Noted

Pittsburgh, April 17.—Specifications on ferroalloys contracts this month are approximately the same as in March. Ferromanganese is $100, base, Atlantic seaboard. Occasionally small lots of English ferromanganese change hands at $100, c.i.f. Atlantic seaboard. The Allegheny Steel Co. is understood to have purchased a small quantity recently.

Open Hearth Output in Valley Increased

Youngstown, O., April 17.—A slight gain in open hearth steel production is noted this week, one additional furnace being started, making 42 active out of 53 independent units. The Carnegie works here are at 75 per cent. Sheet mill operations are lower with 96 independent units active out of 127, against 103 last week. Strip production remains at practical capacity, tin plate unchanged at 85 per cent, independent bar at 60 per cent and Carnegie bar at 75 per cent, while one more seamless unit is active, making 14 welded and seamless units active out of 20.

Chicago Steel Rate 95

Chicago, April 17.—Steelworks operations here are around 95 per cent, a slight gain over 30 days ago. Twenty-nine of the 36 steelworks blast furnaces in the district are active. Production of both rail mills and track fastening departments are near maximum.

Sugar Machinery Sought

Birmingham, Ala., April 17.—Foundries and machine shops here are bidding on considerable sugar machinery of a new type for the sugar cane industry in Louisiana. A new cane has been produced and faster equipment is wanted.

Tin Plate

Specifying June Tonnage—Mill Operations Continue High

TIN PLATE PRICES, PAGE 1023

Pittsburgh, April 17.—Some specifications on June quotas of tin plate have been received, but the bulk of June tonnage has yet to be ordered out. More specifications will come in before May 15, since it is not so necessary for buyers to have their specifications in by the due date as when mills are unable to make prompt deliveries.

All reports are favorable concerning prospective tin plate consumption in the second and third quarters. Makers continue to receive a fairly heavy day-to-day tonnage. American Sheet & Tin Plate Co. sustains a 90 per cent operating basis. Independents are running 85 to 100 per cent. The price is $5.25 per base box.

New York, April 17.—Important tin plate requirements for the Japanese oil industry are under negotiation here.

Ferroalloy Prices

Ferromanganese, 78 to 82 per cent, tidewater, duty paid	$100.00
Ferromanganese, del. Pittsburgh	$104.79
Spiegeleisen, 19 to 21 per cent domesitc furnace	32.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	93.00
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium, carload, producers plant, net ton	200.00
Ferrophosphorus, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

*These prices contract; spot $5 higher.

Scrap

Strength Shown in Steel Grades and Some Prices Advance—Direct Buying on Increase

WHILE no definite movement has occurred in iron and steel scrap an undercurrent of strength has appeared. Steel grades are in better demand and prices have added strength in a number of centers. Railroad tonnages have been taken direct by consumers in several instances, eliminating the dealer.

Chicago, April 17.—No real test of strength is applying to heavy melting steel, but the market is holding nominally at $12.75 to $13, the level of the past four weeks. Prices for other grades are dragging and the market, while not definitely weaker, shows considerable unsteadiness. The tendency of consumers to buy direct from producers has grown recently. The fact that melting steel and other grades are being shipped from outside is a factor in the present weakness.

Boston, April 17.—Sentiment among scrap brokers is better. Several lines found stronger demand developing, with slight firming of prices. Heavy melting steel, railroad wrought, machine shop turnings, cast iron borings and forge flashings were more active.

New York, April 17.—Scrap prices are steady, with the market slightly firmer, reflecting recent advances in the middle west. Most trading is to apply to back orders.

Buffalo, April 17.—First tonnage buying of heavy melting steel in several weeks was reported at the beginning of this week when a Buffalo dealer is said to have made a contract of fair size, for second quarter delivery at a trifle under $15, delivered, for No. 1.

Pittsburgh, April 17.—While the

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Delivered to Consumers.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.50 to 10.75
Boston, dealers	9.50
Buffalo, No. 1	14.25 to 14.75
Buffalo, No. 2	12.75 to 13.25
Chicago	12.75 to 13.00
Cincinnati, deal.	11.50 to 12.00
Cleveland, No. 1	13.50 to 14.00
Cleveland, No. 2	13.00 to 13.50
Detroit, No. 1	10.75 to 11.50
Eastern, Pa.	13.50 to 14.00
Eastern Pa., No. 2	10.50 to 11.50
Bethlehem delivery	13.50 to 14.00
N. Y., deal., R. R.	10.00 to 10.85
N. Y., deal., R. R. yd.	7.00
Pittsburgh, No. 1	15.00 to 16.00
St. Louis	10.75 to 11.25
Valleys, No. 1	14.25 to 14.75

COMPRESSED SHEETS

Buffalo	12.75 to 13.25
Chicago	10.75 to 11.25
Cleveland	12.50 to 12.75
Detroit	10.75 to 11.00
Pittsburgh	15.00 to 15.50
Valleys	14.00 to 14.50

BUNDLED SHEETS

Buffalo	10.00 to 10.50
Cincinnati, deal.	9.50 to 10.00
Cleveland	11.50 to 12.00
Eastern Pa.	10.50
Pittsburgh	14.00 to 14.50
St. Louis	7.75 to 8.25

SHEET CLIPPINGS, LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.75 to 9.25
Detroit	7.00 to 7.50
St. Louis	7.50 to 8.00

STEEL RAILS, SHORT

Birmingham	11.50 to 12.00
Boston	8.50 to 9.00
Buffalo	15.75 to 16.25
Chicago	15.25 to 15.75
Cincinnati, deal.	16.00 to 16.50
Detroit	11.00 to 11.50
St. Louis	15.50 to 16.00

STOVE PLATE

Birmingham	13.00 to 14.00
Boston, consumers	10.00 to 10.50
Buffalo	12.75 to 13.25
Chicago, net	11.50 to 12.00
Cinn., deal., net	8.50 to 9.00
Cleveland	12.00 to 12.50
Detroit, net	10.50 to 11.00
Eastern Pa.	12.00
N. Y., deal., mill.	7.50 to 8.00
Pittsburgh	12.50 to 12.75
St. Louis	12.00 to 12.50

SHOVELING STEEL

Chicago	12.75 to 13.00
Pittsburgh	10.50 to 11.00
St. Louis	10.75 to 11.25

KNUCKLES, COUPLERS SPRINGS

Buffalo	15.50 to 16.00
Chicago	14.00 to 14.50
Eastern Pa.	16.50 to 17.00
Pittsburgh	16.50 to 17.00
St. Louis	12.50 to 13.00

LOW PHOSPHORUS

Buffalo, billet and bloom crops	16.75 to 17.25
Cincinnati, deal.	13.00 to 13.50
Eastern Pa.	17.50 to 18.50
Pitts. billet and bloom crops	18.50 to 19.00
Cleve. billet and bloom crops	17.00 to 17.50

FROGS, SWITCHES, GUARDS

Chicago	13.50 to 14.00
St. Louis	12.00 to 12.50

ANGLE BARS—STEEL

Buffalo	14.00 to 14.50
Chicago	14.00 to 14.50
St. Louis	11.50 to 12.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	11.00 to 12.00
Boston, dealers	10.00 to 10.25
Buffalo, No. 1	12.25 to 12.75
Buffalo, No. 2	14.25 to 14.75
Chicago, No. 1	12.30 to 12.90
Chicago, No. 2	12.75 to 13.00
Cinn., No. 1 deal.	10.50 to 11.00
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 deal.	11.00 to 11.50
Pittsburgh, No. 1	11.00 to 11.50
Pittsburgh, No. 2	15.00 to 16.00
St. Louis, No. 1	9.50 to 10.00
St. Louis, No. 2	10.75 to 11.25

WROUGHT PIPE

Boston, deal.	7.50 to 8.00
Eastern Pa.	12.50
Buffalo	12.00 to 12.50
New York, deal.	8.00 to 8.50

YARD WROUGHT

Boston	8.00 to 8.50
Eastern Pa.	14.50 to 15.00

BUSHELING

Buffalo	12.75 to 13.25
Chicago, No. 1	10.50 to 11.00
Chicago, No. 2	8.50 to 9.00
Cinn., No. 1 deal.	10.50 to 11.00
Cinn., No. 2	6.50 to 7.00
Cleveland, No. 2	10.00 to 10.25
Pittsburgh, No. 1	12.00 to 12.50
St. Louis, No. 1	9.50 to 10.00
Detroit, mixed	7.25 to 7.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston	5.50 to 5.75
Buffalo	8.50 to 9.00
Chicago	7.00 to 7.50
Cincinnati, deal.	7.50 to 8.00
Cleveland	7.25 to 7.50
Detroit	6.00 to 6.50
Eastern Pa.	10.00 to 10.50
New York, deal.	6.25 to 7.35
Pittsburgh	10.00 to 10.50
St. Louis	7.00 to 7.50

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, deal.	5.75 to 6.25
Buffalo	9.50 to 10.00
Cincinnati, deal.	8.25 to 8.75
Cleveland	10.00 to 10.25
Detroit	6.75 to 7.00
Eastern Pa.	10.50 to 11.00
New York, deal.	6.75 to 7.35
Pittsburgh	10.50 to 11.00

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	8.00 to 9.00
Boston, chem.	9.50 to 10.00
Boston, deal.	6.00 to 6.25
Buffalo	9.75 to 10.25
Chicago	9.25 to 9.50
Cincinnati, deal.	8.25 to 8.75
Cleveland	10.00 to 10.25
Detroit	6.75 to 7.00
Eastern Pa.	10.50 to 11.00
Eastern Pa., chem.	14.50 to 15.00
New York, deal.	6.75 to 7.35
Pittsburgh	10.75 to 11.25
St. Louis	8.75 to 9.25
Valleys	13.50

PIPES AND FLUES

Chicago, net	8.50 to 9.00
Cincinnati, deal.	7.75 to 8.25
St. Louis	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.50 to 12.00
Chicago, net	11.50 to 12.00
Cleveland	12.00 to 12.50
Eastern Pa.	11.50 to 12.00
New York, deal.	8.00 to 8.50
St. Louis	11.00 to 11.50

FORGE FLASHINGS

Boston, deal.	6.75 to 7.25
Buffalo	12.00 to 12.50
Chicago	9.50 to 10.00
Cleve., over 10 in.	12.25 to 12.50
Detroit	9.50 to 10.00
Pittsburgh	13.00 to 13.50

FORGE SCRAP

Boston, deal.	6.00 to 6.50
Chicago	15.50 to 16.00
Eastern Pa.	11.00

ARCH BARS AND TRANSOMS

Chicago, net	18.50 to 19.00
St. Louis	19.50 to 20.00

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	12.50 to 13.00
Chicago	10.25 to 10.75
Cleveland	12.00 to 12.25
Eastern Pa.	12.00 to 12.50
Pittsburgh	13.00 to 13.50
St. Louis	9.50 to 10.00

STEEL CAR AXLES

Birmingham	16.00 to 17.00
Boston, ship. point	15.50 to 16.00
Buffalo	16.75 to 17.25
Chicago	17.65 to 18.20
Cleveland	16.00 to 16.50
Eastern Pa.	21.00 to 22.00
Pittsburgh	18.50 to 19.00
St. Louis	18.00 to 18.50

SHAFTING

Boston, ship. point	13.00 to 13.50
Chicago	17.35 to 17.90
Eastern Pa.	17.50 to 18.00
New York, deal.	14.00 to 14.50
St. Louis	16.50 to 17.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	14.00 to 15.00
Boston, con.	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel	15.50 to 16.00
Chicago, iron	13.50 to 14.00
Chi., rolled steel	15.00 to 15.50
Cincinnati	12 25 to 12.75
Eastern Pa.	16.00 to 16.50
N. Y., iron, deal.	11.50 to 12.00
Pittsburgh, iron	14.50 to 15.00
Pittsburgh, steel	16.50 to 17.00
St. Louis, iron	12.75 to 13.25
St. Louis, steel	13.50 to 14.00

No. 1 CAST SCRAP

Birmingham, cup.	14.00 to 14.50
Boston	14.00 to 14.50
Buffalo	14.50 to 15.00
Chicago, machiny.	15.65 to 16.25
Chicago, railroad.	14.30 to 14.85
Chicago, agri.	14.00 to 14.55
Cincinnati, mach. cupola, net deal.	14.50 to 15.00
Cleveland, cupola	16.50 to 17.00
Detroit, net	12.25 to 12.75
Eastern Pa. cupola	16.25 to 16.75
N. Y., cup., deal.	13.00 to 13.50
Pittsburgh, cupola	15.00 to 15.50
San Fran., del.	20.00 to 21.00
Seattle	15.50 to 15.75
St. Louis, railroad	13.00 to 13.50
St. Louis, agri.	13.00 to 13.50
St. Louis, machy.	13.00 to 13.50
Valleys	16.50 to 17.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	11.50 to 12.00
Cleve., breakable	12.25 to 12.50
Detroit, auto., net	20.00 to 21.00
Detroit mach., net	12 25 to 12.75
Eastern Pa.	15.50 to 16 00
New York, deal.	11.50 to 12.00
Pittsburgh	13.00 to 13.50

MALLEABLE

Boston, railroad	13.00 to 13.50
Buffalo	15.00 to 15.50
Chicago, agri.	11.75 to 12.25
Chicago, railroad	12.75 to 13.00
Cinn., R. R., deal.	12.50 to 13.00
Cinn., agri., deal.	12.25 to 12.75
Cleveland, agri.	15.00 to 15.50
Cleveland, rail.	15.50 to 16.00
Detroit, auto	14.50 to 15.00
Pittsburgh, rail.	15.00 to 15.50
St. Louis, agri.	11.50 to 12.00
St. Louis, rail.	11.50 to 12.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	13.00 to 13.50
Boston, deal.	10.00 to 10.25
Buffalo	14.50 to 15.00
Chicago	14.00 to 14.50
Eastern Pa.	15.25 to 15.50
New York	11.00 to 11.50
Pittsburgh district	16.50 to 17.00
St. Louis	13.00 to 13.50

LOCOMOTIVE TIRES

Chicago, No. 1	14.00 to 14.50
Chicago, cut	16.00 to 16.50
St. Louis, No. 1	12.00 to 12.50

LOW PHOS. PUNCHINGS

Chicago	14.00 to 14.50
Pittsburgh	16.50 to 17.00

scrap market has every aspect of activity and several influences tend toward price advances, there is a tendency toward conservatism. The full range on heavy melting steel is $14.50 to $16, three grades being sought in recent transactions; ordinary at $14.50 to $14.75, No. 1 at $15 to $15.50, and premium at $15.75 to $16. In one case a dealer paid above $16 to cover a short order. The recent Baltimore & Ohio tonnage went to a mill here at about $15.50, and the Pennsylvania railroad scrap went to West Virginia and Ohio mills at $15.86 and $15.96, respectively.

Cleveland, April 17.—Iron and steel scrap fails to reflect recent strength in the Pittsburgh district. Consumption is at a good rate, but users generally are well supplied and no increase is shown in shipments. The recent purchase by a Steel corporation subsidiary here of 7000 tons of No. 1 heavy melting steel had little market effect. As low as $13.50 has been paid by dealers for this grade, although higher figures have ruled in some sales. The current price on No. 2 steel is $14 to $13.50.

Detroit, April 17.—Iron and steel scrap continues to come out at a rate equalling March but further weakness has been arrested by the show of strength at Pittsburgh. About half the shipments from this district now go to Pittsburgh. A Welland, Ont., interest has taken 15,000 tons of turnings. In one day recently Hudson sold 100 cars of bundles and Chevrolet 65 cars of turnings. The first cargo of heavy melting steel has moved to a Cleveland mill, but navigation to Buffalo has not yet opened. Bundled sheets are up 25 cents.

Cincinnati, April 17.—Railroad scrap buyers report having obtained offerings of six railroads last week at about March prices, which were slightly above February prices. There has been no change in prices, a slight accession of firmness being noted in the steel grades, with heavy melting strongest.

St. Louis, April 17.—Iron and steel scrap prices continue tending downward, several important items having dropped to new low marks on the present movement. Consumer buying is almost totally absent, and exchanges among dealers are small as contracts are nearly worked out. While the melt is fairly well sustained, particularly steel mills, are well supplied with scrap.

Birmingham, Ala., April 17.—More activity in delivery of iron and steel scrap is noted but quotations remain unchanged and market conditions are not considered better. Heavy melting steel still is quoted at $10.75.

Philadelphia, April 17.—M. Samuel & Co., Brooklyn, N. Y., were successful bidders last week on 7000 tons of steel shells at Lake Denmark, N. J., sold by the navy, at $14.76 a gross ton. These shells were damaged in the Lake Denmark explosion several years ago. The scrap market otherwise was uninteresting. Moderate lots sold during the past week were principally cupola, cast pipe, wrought pipe and stove plate.

Semifinished

Specifications Heavy, and Prices Steady—Additional Lots of Billets Purchased at $33

SHIPMENTS of semifinished steel are heavy, especially billets and slabs, specifications for which have been increased by some makers of strips and sheets. Sheet mills also are ordering out sheet bars to maintain their mill operations at 80 per cent. Efforts to obtain billets at $32 have not been successful and some users have bought additional lots in the open market at $33.

SEMIFINISHED STEEL PRICES, PAGE 1024

Pittsburgh, April 17.—Small orders for billets and slabs are numerous. Specifications are heavier due to sustained operating rates among strip makers and sheet mills. Effort to uncover $32 on billets has not been successful, makers claim, and strip producers have bought in the open market at $33, the same as their contract price. Sheet bars are inactive except in intercompany relations, and in these cases specifications are heavy, in keeping with 80 per cent sheet mill operation. The openly quoted market is $34, Pittsburgh. Forging billets are fairly active, with occasional specifications for carloads against $38 contracts. One or two skelp inquiries are out from tubular goods companies, 1.85c being quoted. Shipments against skelp contracts are fairly regular, though they could be much larger. Wire rod buyers are covered for second quarter at $44, but so far have not furnished specifications, still having low-priced material to absorb.

Chicago, April 17.—Shipments of semifinished steel are reported heavy at the March rate. Forging billets are $39 to $43, Chicago. Billets, 4 x 4-inch base, are $34, Chicago. Sheet bars are reported steady at $35.

Bolts, Nuts, Rivets

Buying Is Fair and Second Quarter Needs Well Covered

NUT AND BOLT PRICES, PAGE 1024

Pittsburgh, April 17.—Orders for nuts, bolts and rivets have been slower since April 1, due possibly to heavy buying late in March. Jobbers have fairly good stocks. Structural shops are buying rivets in fairly large quantities and occasionally railroad shops buy single carloads. The industry is on a 60 to 70 per cent basis. Prices are on the basis of 70 off for nuts and bolts; 70 and 10 off for small rivets, and 2.90c on large rivets.

New York, April 17.—While bolt and nut demand is only fair, present bookings averaging lower than during the first quarter, prices continue strongly maintained at 70 per cent off list for large consumers and jobbers and at 60 off for small trade, including dealers. Several carloads of bolts and nuts will be needed in connection with the new dry dock now being constructed for the Todd Shipyards Corp. at Erie Basin, Brooklyn, N. Y.

Cleveland, April 17.—Further slight improvement is shown in specifications for bolts, nuts and rivets. Indications are that sales this month will exceed expectations, with good demand from a diversified list of consumers. Activity in the automotive and construction industries is being reflected in sales, and jobbers are specifying in good volume.

Chicago, April 17.—Buyers of bolts, nuts and rivets show a tendency to specify more fully against contracts. This was noticeable in March and specifications thus far in April indicate a similar tendency. Second quarter contracting is practically completed. No resistance has been shown to prices. For spot orders of bolts in small lots 60 off is being obtained, and 70 off for small rivets.

Refractories

Refractory Orders Mostly Small—Kilns Operate 60 Per Cent

REFRACTORIES PRICES, PAGE 1024

Pittsburgh, April 17.—Incoming refractory business does not show much expansion over the March rate but represents a fairly even flow of orders, mostly small. Kiln operations still are on a 60 per cent basis but buyers are not ordering for stock, being able at all times to receive prompt deliveries. Prices are holding well. Repairs with occasional relinings constitute the major portion of today's activity. From time to time a quantity of brick for open-hearth expansion is bought, such as the recent Timken Roller Bearing, Otis Steel, Carnegie Steel and other orders. American Rolling Mill Co., Middletown, O., and Pittsburgh Steel Co., Pittsburgh, are expected to be heavy brick buyers soon, the latter for some coke oven installations. Koppers Co. places orders from time to time for this latter purpose.

Chrome and magnesite brick specifications against contracts keep up well at unchanged figures.

Bars

Specifications Lighter but Mills Continue Production—Deliveries Continue Deferred

SHIPMENTS of soft steel bars continue at a high rate, indicating steady consumption, though specifications have been relatively light so far this month. Indications are for heavier orders against second quarter contracts. Deliveries continue several weeks deferred, despite high production rates. Prices are steady at 1.85c, Pittsburgh and 2.00c, Chicago.

BAR PRICES, PAGE 1023

Chicago, April 17.—Shipments of bar products, as well as plates and shapes, are keeping the March pace, despite the fact specifications from car builders have been spotty. A moderately heavy tonnage of bar sales is reported for the week, one producer's total sales having been close to shipments. Bar mill operations are about 90 per cent and specifications tax both output and shipments. Bar specifications lead in number but not in tonnage. Bar mill deliveries still are four to six weeks delayed. Buying is well diversified. April automotive buying is expected to be close to the March rate, and demand from cold bar finishers serving the automotive trade is heavy. Farm implement works are enjoying the best production of the past nine or ten years and are taking heavy shipments. Tractor plants are operating at capacity. Road machinery business is good.

Forward buying of bars is not heavy but mills are obtaining 2.00c, Chicago. It is admitted that several preferred industries are numbered among the buyers, but preferred buyers are said to be fewer than in several years.

Rail steel bar mills are operating at a top mark, demand coming largely from interests serving the farm areas and from the reinforcing bar industry. The second quarter price is 1.85c, Chicago Heights. Bar iron is steady at 2.00c, Chicago.

Pittsburgh, April 17.—With a slight tapering off in specifications, merchant steel bar makers still are hopeful the latter part of the month will bring more business than the first half. Various consumers as well as jobbers are utilizing a great deal of steel so that the prospects are bright for the remainder of the month. Makers report occasional specifications against second quarter contracts. While isolated carloads are taken at 1.90c, 1.85c is considered the more representative market figure. Bar mills continue to operate at 80 to 85 per cent, and deliveries of some sizes are at least three weeks deferred.

Detroit, April 17.—Steel bar bookings have been light, but this year the heavy business has developed in the closing week of the month. Shipments are on a parity with March, which is saying they are at the best rate of the year. Forging shops in particular are taking tonnages. Specifications against second quarter contracts indicate no marked letup in May. On most shipments 1.85c, Pittsburgh, is the price.

Cleveland, April 17.—New business in bar mill products, especially the heavier sizes which run into tonnage, is light. Hope is entertained that the last half of the month will remedy the deficiency. Automotive interests are the chief buyers. Pressure for delivery on some sizes is insistent, but rapid deliveries are wearing down mill order books. The most general quotation is 1.85c, Pittsburgh or Cleveland mill.

Philadelphia, April 17.—Pennsylvania railroad will open bids April 26 on 5000 tons of bars for second quarter shipment. Specifications for bars, at 1.85c to 1.90c, Pittsburgh, are better.

Large Pittsburgh Mills at 85 Per Cent

Pittsburgh, April 17.—Steelmaking rates are fairly well sustained here at 80 to 85 per cent. The larger steel companies like Carnegie, Jones & Laughlin and Bethlehem are at 85 per cent. Among the smaller independents 75 per cent is again the ruling figure. At Monessen, Pa., 9 out of 12 open hearths are operating, but at Midland, the schedule recently has been cut to 8 out of 12. Butler, Pa., is lower, at slightly above 50 per cent, but at Vandergrift, Pa., Weirton, W. Va., Steubenville, O., there is no change.

Alien Steel Sales Ebb

New York, April 17.—Large buyers are taking less foreign steel but jobbers have increased their purchases. Chief imports now are steel bars and structural shapes, bars bringing 1.75c to 1.80c, base, duty paid, tidewater.

On beams and angles the import price is 1.70c to 1.75c, base, duty paid. On channels the minimum is 1.80c. Foreign reinforcing bar sales have fallen off greatly.

Plates

Specifications Heavy on Second Quarter Contracts—Oil Storage Tank Work Active in East

PLATE fabricators are taking large tonnages on their contracts, while new orders are moderate. About 20,000 tons of plates are involved in oil storage tank work under negotiation at New York, principally for erection in western Texas. A good demand also has developed for floor plate with raised patterns. Several oil pipe line projects are developing at Chicago.

PLATE PRICES, PAGE 1023

Pittsburgh, April 17.—Plate mills are obtaining fair size specifications on second quarter contracts. However, in the majority of instances consumers are using stocks accumulated during March. While an effort still is being made to obtain 1.90c on small lots, buyers find it easy to place business at 1.85c. Only occasional single carload orders carry 1.90c. Fabricating shops are fairly busy on barges and car floats.

New York, April 17.—Plate demand continues fair, although some makers report present bookings are at a rate below first quarter. A considerable percentage of business involving small lots is going at 2.05c, base, Coatesville, or 2.22½c, delivered, New York. The market is 2.00c to 2.05c, base, Coatesville, and 1.85c to 1.90c, base, Pittsburgh. Some southern New England consumers are obtaining requirements against second quarter contracts at 1.80c, base, Pittsburgh. A feature is demand for fabricated plate work, particularly tanks. Fully 20,000 tons of plates are involved in oil storage tanks, principally for West Texas. Increasing demand is noted for floor plate rolled with raised patterns. Domestic floor plate is firm at 3.55c, base, Pittsburgh. There is considerable competition from importers who sell at about 3.00c, duty paid. and in some instances around 2.50c.

Cleveland, April 17.—Specifications against second quarter plate contracts are heavy but new business continues light. Standardized tank makers are enjoying a fair run of business. Few large gas holders are up. Plates are 1.85c, Pittsburgh, with 1.90c on small lots.

Chicago, April 17.—Tank plate fabricators took 1200 tons during the week for southwestern oil fields. Inquiry is less than 2000 tons. Several large pipe lines are contemplated. The project from the Seminole fields to Kansas City is being financed. Car shop specifications for the Chicago, Milwaukee, St. Paul & Pacific car order will not be before the mills for

several weeks. Mills are obtaining 2.00c, Chicago, for small-lot plate business that is offered, but forward buying is scanty. Rollings are two to five weeks ahead of orders on most sizes.

Philadelphia, April 17.—Pennsylvania railroad opens bids April 26 on 15,000 tons of plates for second quarter shipment. Eastern plate mills are operating 50 to 65 per cent. Current bookings are chiefly at 2.05c, Coatesville, or 1.90c, Pittsburgh.

CONTRACTS PLACED

3500 tons, 31 barges for Mississippi river commission, to Riter-Conley Co.

3500 tons, car floats for Pennsylvania railroad, understood to have been awarded American Brown Boveri Electric Co.

3000 tons, 15 barges, New York Central railroad, understood to have been awarded a New York shipbuilding company.

400 tons, Pacific Car & Foundry Co. work, Seattle, to Pacific Coast Steel Co.

110 tons, garage building for Weingartner Realty Co., New Castle, Pa., to American Bridge Co.

CONTRACTS PENDING

4830 tons, Wildcat aqueduct, Oakland, Calif.; bids in April 20.

3668 tons, Sequoia aqueduct, Oakland, Calif.; bids in April 20.

3140 tons, dock sheds, Port of New Orleans; Lukens Steel Co. low bidder.

445 tons, siphons for Kittitas canal, Yakima project, Washington; Pittsburgh-Des Moines Steel Co. low bidder.

Unstated tonnage, steel discharge pontoons, 38 x 14 x 3-foot, for United States Engineers, Rock Island, Ill.; bids in May 12.

Foreign Spar Selling at $15 to $16

New York, April 17.—Recent sales of foreign fluorspar involve some 1500 tons. Some material in stock here has been closed out at $15 to $16, duty paid, tidewater, per net ton. High grade German fluorspar of the 85-5 per cent grade has been sold for early shipment at nearly $16.50, duty paid, net ton.

It is expected here, now that the Supreme Court has upheld the flexible provisions of the tariff act, that action may be expected soon with reference to the movement of last year to have the rate on fluorspar increased 50 per cent.

Asks $16 for Fluorspar

Pittsburgh, April 17.—Shipments of domestic fluorspar still are being made against $14 to $15 contracts, but one producer is now asking $16 f.o.b. mines, on 85-5 material.

Wire Plant Is Ready

The Canadian Steel Corp., formerly at Hamilton, Ont., has practically completed its new plant at Ojibway, Ont., across from Detroit, for the manufacture of wire fence, barbed wire, bale ties and other wire products, and will start operations this month.

Pipe

Mills Working Off Line Pipe Backlogs—Cast Still Active with 12,000-Ton Inquiry at Detroit

TUBULAR products mills are working off backlogs of line pipe. Several lines are being projected but none is being placed. Most of the tonnage covered by jobbers for 30-day delivery at the old price of an extra 5 per cent discount has been shipped. Cast pipe continues active with a 12,000-ton inquiry from Detroit featuring prospective business.

PIPE PRICES, PAGE 1024 1056

Pittsburgh, April 17.—Pipe jobbers were given the privilege of specifying one month's quota of tonnage at the old basis prior to cutting off the 5 per cent preferential discount noted two weeks ago. This tonnage in most cases already has been shipped and in the remainder must be shipped by April 30. Standard full weight merchant pipe buying has been more active. Line pipe tonnage still is low, but no lower than a year ago. Some Youngstown mills have almost worked out of line pipe backlogs, and replenishments have not been booked. Several gas lines are projected for the West but nothing has reached the closing stage as yet. The award of 100,000 to 150,000 tons for a gas line to Kansas City, Kans., to a Milwaukee maker lacks confirmation here.

Boston, April 17.—Private orders continued fairly large for pipe. Municipal lettings amounted to nearly 1000 tons during the week. Local prices hold at $39.10 for 6 to 12-inch pipe for delivery to common Boston freight rate points, $44.10 for 4-inch pipe, and on the larger sizes concessions still prevail on desirable tonnages.

New York, April 17.—Demand for cast pipe continues spotty, with little fresh inquiry.

New inquiries for oil line pipe include one for 15 miles of 8-inch, about 1100 tons, for a subsidiary of the Standard Oil Co. of New Jersey.

At opening of bids here today on 2531 tons of water pipe, Donaldson Iron Co. was low on 670 tons of 12, 16 and 20-inch pipe at $37.90, delivered; United States Cast Iron Pipe & Foundry Co. was low on 900 tons of 8-inch at $38.25; Warren Pipe & Foundry Co. was low on 900 tons of 8-inch at $38.40 and Donaldson Iron Co. low on 61 tons of 4 and 6-inch at $38.90. Prices show a material advance over the local opening a month ago and appear in general line with the market for the past two weeks. The general tone still is not strong, reflecting partially the restricted inquiry.

Youngstown, O., April 17.—Volume of incoming business for both butt and lapwelded pipe continues routine, and shipments continue satisfactory, especially on the buttwelded or building pipe. Some additional oil well business has resulted in an additional seamless unit becoming active here. Indications point to the new discounts taking effect within the month, when jobbers will begin their new purchasing.

Cleveland, April 17.—Pipe jobbers in this district have been shipped most of the tonnage which they ordered under the 30-day coverage privilege at the time the price was advanced 5 per cent early this month. Shipment of this tonnage at mill convenience has enabled the makers to fill out some production schedules for April.

Chicago, April 17.—Moderate size miscellaneous orders for cast iron water pipe are being booked. Despite the lack of important municipal tonnage, prices are firm. Some contract orders are being taken at $32. Sellers are obtaining up to $32 to $33, base, Birmingham, for carlots. Six to 24-inch pipe is $38.20 to $40.20, delivered, making the Birmingham base $30 to $32. Lynchburg Foundry Co. is understood to be low bidder at $30, Birmingham, for 350 tons of 6, 8 and 12-inch pipe for Oak Park, Ill. Detroit has asked for bids on 12,000 tons of large size pipe.

Birmingham, Ala., April 17.—Several attractive specifications have been reported recently on cast iron pressure pipe and shipments are considerably greater as spring weather is being felt in various parts of the country. Prices are firm at $30 to $31 on 6-inch and over sizes.

CONTRACTS PLACED

600 tons, 4 to 16-inch cast pipe for department of water supply, gas and electricity, New York, through Wilcox & Stutz, general contractors, to United States Cast Iron Pipe & Foundry Co.; for installation in Queens.

600 tons, 4 to 16-inch cast pipe for a private eastern buyer for export, to B. Nicoll & Co.

526 tons, 4 to 8-inch class B, East Palo Alto water works district, Redwood City, Calif., to unnamed interest.

450 tons, 4 to 10-inch pipe for Oshkosh, Wis., to James B. Clow & Sons.

350 tons, 6 to 12-inch pipe, Wellesley, Mass., to Warren Pipe & Foundry Co.

350 tons, 24-inch pipe and fittings for sewage commission, Brockton, Mass., to Warren Pipe & Foundry Co.

200 tons, 8-inch pipe, Winthrop, Mass., to unstated local jobber.

129 tons, 8 to 24-inch class B, outfall sewer, San Bernardino, Calif., to unnamed interest.

100 tons, 6-inch class B pipe for Bloomfield, N. J., to United States Cast Iron Pipe & Foundry Co., at equivalent of around $28, Birmingham.

CONTRACTS PENDING

17,440 tons, 56 and 60-inch class C, Wildcat aqueduct, Oakland, Calif.; bids in April 20.

13,250 tons, 50, 56 and 60-inch class C, Sequoia aqueduct, Oakland, Calif.; bids in April 20.

12,000 tons, 24, 30 and 36-inch cast pipe for Detroit; bids April 20.

8744 tons, 4 to 30-inch class B, Long Beach, Calif.; bids in April 17.

2795 tons, straight and 180 tons lugged straight 42-inch and 48-inch class C water pipe and 103 tons of special castings, Milwaukee; bids close April 23. Bids also close April 18 on 110 tons of 36 and 54-inch pipe.

2600 tons, 12 to 18-inch pipe, Attleboro, Mass.; United States Cast Iron Pipe & Foundry Co., low bidder.

2264 tons, 4 to 20-inch class A and B, Monrovia, Calif.; bids in.

450 tons, White Plains, N. Y.; bids opened April 16.

234 tons, 24-inch class B, Los Angeles; B. Nicoll & Co. low bidders.

234 tons, 4 to 8-inch class B, Buckeye, Ariz.; bids in.

210 tons, 6 and 8-inch class C, improvement of Willow street, San Diego, Calif.; bids in.

132 tons, 4 and 6-inch class B, Oak Harbor, Wash.; bids opened.

111 tons, 6 and 12-inch class B, sewer project, Long Beach, Calif.; bids in April 17.

Unstated tonnage, piping and auxiliaries at Missouri river plant of St. Louis waterworks, St. Louis; bids in April 24 by water commissioner, city hall, St. Louis.

350 tons, 6, 8, and 12-inch pipe for Oak Park, Ill.; Lynchburg Foundry Co. low bidder.

Sheets

Large Consumption, Light Buying Features Market—Other Grades Easier.

SHEET consumption is holding up well, but new buying is slack, one reason being the fact users took out large tonnages at the close of the first quarter, and the flow of large orders recently has developed toward the end of the month. The reduction of $3 a ton in automobile sheets has unsettled the market, leading to lower prices on other grades. Some buyers wait further developments.

SHEET PRICES, PAGE 1023

Youngstown, O., April 17.—The retreat of the general sheet trade under the initiative of a $3 slump in autobody to 4.00c and of fender stock to 4.10c, Pittsburgh, has extended to all grades. The extent of the unsettlement may be gaged from the fact that galvanized now ranges from 3.60c to 3.75c, blue annealed from 1.90c to 2.05c, common black from 2.70c to 2.85c, the latter price being asked of carload buyers. The automotive industry's upset of the sheet trade for this second quarter is almost complete, in the minds of sheetmakers. Buying has fallen to a minimum, especially for the common grades, and specifications again are slow. This has led to curtailment of mill operations in this district this week, with 96 independent units active out of 127, against 103 units active last week. One Niles plant is idle, and a nearby works did not start until this morning.

New York, April 17.—Sheetmakers generally are more eager to get business and an easier tone has developed. Development of the 4.00c, base, Pittsburgh, price on full finished has resulted in generally lower prices. On galvanized in attractive tonnages it is unnecessary to pay higher than 3.65c, base, Pittsburgh. Black are 2.75c to 2.90c, base, Pittsburgh. Blue annealed are 2.00c to 2.10c, base, Pittsburgh. One maker is not quoting any higher than 2.00c. The $2 extra on widths over 40 inches is being maintained generally on blue annealed.

New York, April 17.—Japanese consumers of electrical sheets are obtaining more favorable prices by placing their business in small lots. For three weeks a steady stream of small orders for shipment to Japan has been booked. American mills are getting a smaller proportion of the Japanese business, for one reason because Japanese domestic production has increased. German mills also have cut in, especially on motor sheets.

Philadelphia, April 17.—On most of the current sheet business prices are 2.10c, base, Pittsburgh, for blue annealed; 2.90c for black, and 3.75c for galvanized. Some attractive orders have been taken at 2.00c, 2.75c and 3.60c, respectively. Consumers who placed second quarter contracts at the higher prices have requested modification but so far mills have not agreed, at least not on any widespread scale.

Buffalo, April 17.—Sheet producers are well booked for this quarter, and some consumers are stressing delivery in placing contracts, especially automobile manufacturers. Mills are operating at 85 per cent.

Pittsburgh, April 17.—Due to the active selling rate in sheets throughout March, April so far has been quiet. Some makers here say they are able to get the full 2.10c price on blue annealed, claiming this to be the firmest of all grades. One important maker of black sheets points to orders taken at 2.90c, but admits having had to meet 2.80c where larger tonnages were involved. Automotive buyers are paying 2.75c. The galvanized situation is less firm, with 3.65c more common, but 3.75c not entirely out. Other grades have been affected by the drop in autobody to 4.00c. Some producers not willing to relinquish the 4.15c have not sold a pound the past week. Sheet mill operations are unchanged at 80 to 85 per cent. American Sheet & Tin Plate Co. continues at 80 per cent. Diversified industries are noted among those furnishing shipping instructions. Agricultural implement makers continue to be important consumers, along with automotive and allied trades. Sheets used in building construction have slackened a trifle, as have electrical sheets.

Cleveland, April 17.—Weakening sheet prices have failed to affect mill operations. Although backlogs are sufficient only to assure week-to-week operation, mills run over 80 per cent. The barrel trade continues to work up tonnage purchased in March. Most current buying is from miscellaneous consumers with heaviest specifications from automotive trade. Several makers have notified their sales offices to have all specifications for the April portion of second quarter contracts in by April 20. Black sheets are 2.75c to 2.90c, Pittsburgh, blue annealed 2.00c to 2.10c, galvanized 3.65c to 3.75c, metal furniture stock 3.75c to 3.95c, and autobody 4.00c.

Detroit, April 17.—Black, blue and galvanized sheets all are weaker following the drop in autobody sheets to 4.00c, Pittsburgh. On black the market is 2.75c, while blue and galvanized tend toward 2.00c and 3.65c, respectively. Failure of the mills to hold 4.15c on autobody has had a dispiriting effect on the entire market. April shipments are maintained at the high level of March. Specifications for May shipments, received thus far, forecast no marked change. Consumption is as good as price is bad for the mills. Ford Motor Co. is increasing its commitments and by placing parts orders is stimulating demand from parts makers.

Chicago, April 17.—Forward buying in steel sheets continues discouraging to producers. Most requirements are for material as needed. Old contracts are practically worked off but mill books are scheduled only a week to ten days ahead. Blue annealed sheets are more active. The lighter gages are in poor demand. Sheet jobbers are taking less material. Quotations for local delivery are reported steady. Operations again are 75 to 80 per cent for the district. The leading independent is operating full this week after having its ten mills down at Milwaukee several days last week. Chicago delivered prices are 3.05c for No. 24 black, 3.90c for No. 24 galvanized, and 2.25c to 2.35c for No. 10 blue annealed.

St. Louis, April 17.—Producers and distributors of sheets report continued satisfactory business. Specifications are well up to expectations, and new orders while small bulk heavily in the aggregate. The leading local producer is operating at capacity in all departments except galvanized, which is at about 70 per cent. Prices are steady.

Production of tin plate in France for 1926 totaled 63,132 tons.

Structural Shapes

Bridgework Features Inquiry with 12,000-Ton Project in South Carolina Heaviest New Work—Awards Maintain Seasonal Average

INQUIRY for a bridge at Charleston, S. C., features current new work, 12,000 tons of structural steel being required in this project. Bridgework in the East and Middle West is more active for railway and highway use. Awards, although maintaining the seasonal average, included few large tonnages during the week. A subway section requiring 5000 tons and a mill building in Pennsylvania taking 3500 tons were among the largest contracts placed.

Prices on plain material have steadied at 1.85c, Pittsburgh, and 2.00c, Chicago equivalents, although extension of first quarter contracts has prevented a decided test of the market strength. Fabricated quotations continue variable with weakness prevalent on all attractive work.

STRUCTURAL SHAPE PRICES, PAGE 1023

New York, April 17.—Bridge work again features the eastern structural market. Including 12,000 tons for the Cooper river bridge at Charleston, S. C., more than 18,000 tons is out. Approximately 1200 tons of bridge work has been placed. Another feature is the award of 5000 tons of subway work in Brooklyn. While local buying has been only moderate, a heavy tonnage continues under active contemplation. Meanwhile, local fabricated material prices continue at low levels, scarcely reflecting the upward tendency in shape prices, now close to 2.19c, New York. Eastern shape mills report an increased volume of business, with prospects that this month will be better than March, not only from the standpoint of new business but also of production.

Boston, April 17.—About 350 tons of structural steel was awarded in the past week, while an additional 500-ton letting is expected within a few days. Pending are 400 tons for an apartment house on Newbury street in the Back Bay district and 150 tons for the new building for Thompson's Spa on Summer street.

Pittsburgh, April 17.—Structural beam and other shape mills are shipping against contracts winding up business accumulated late in March. So far they have made little advances upon second quarter tonnages taken at 1.85c and 1.90c figures. The latter price continues to apply in connection with a few scattered carload orders. Awards this week include a 3500-ton sheet mill building at Butler, Pa. to McClintic-Marshall Co. Inquiries are at a good rate, but it seems difficult to close them.

Philadelphia, April 17.—Old first quarter structural shape prices have been withdrawn in some instances in this territory in the past week, but are outstanding in many cases. The market continues 1.80c to 1.85c, Pittsburgh, and 1.95c to 2.00c, Bethlehem, but larger consumers continue to buy much under these prices. Shape demand has improved in the past week and eastern mills now are operating 70 to 85 per cent of capacity. Pennsylvania railroad will open bids April 26 on 2000 tons of shapes for second quarter needs.

Cleveland, April 17.—Awarding of 1200 tons for two Union Terminal bridges during the week was the only large activity in the structural market. Bids are in on the 1300-ton Lake Shore apartment hotel which is the largest definite tonnage pending in this district. Plain material specifications continue fair at the market, 1.85c, Pittsburgh.

Chicago, April 17.—About 7500 tons of structural steel inquiry has come out in the West, including additional bridge work. Several fair sized building awards are pending. Fabricators are taking material largely as needed for individual jobs. Fabricating shops on the whole have had a volume of business this year slightly above last year. Lack of car building specifications has eased the delivery situation to some extent. Deliveries are four to five weeks deferred. Mills obtain 2.00c, Chicago, for new sales, largely in small lots.

Milwaukee, April 17.—Building projects now shaping up promise to make 1928 the best year in history in structural steel demand here. Among proposed structures are a 16-story tower building for the Milwaukee Gas Light Co., an addition duplicating the 8-story Northwestern Mutual Life Insurance Co. building, and replacement of the Kirby House. Plans will be ready late in June for the Milwaukee county courthouse.

Awards Compared

	Tons
Awards this week	29,505
Awards last week	32,862
Awards two weeks ago	27,658
Awards this week in 1927	53,818
Average weekly awards, March	30,805
Average weekly awards, 1928	42,322
Total awards to date, 1927	605,074
Total awards to date, 1928	634,827

CONTRACTS PLACED

5000 tons, subway section 2, route 109, Brooklyn, N. Y., awarded through Rodgers & Haggerty Co., to American Bridge Co.

3500 tons, sheet mill building for American Rolling Mill Co. at Butler, Pa., to McClintic-Marshall Co.

2000 tons, New York Central railroad bridgework in Indiana, to Ft. Pitt Bridge Works; including 1300 tons for South Bend, as announced last week.

1500 tons, apartment, Fifteenth and Hicks, Philadelphia.

1500 tons, University of Minnesota auditorium, Minneapolis, to unstated fabricator.

1400 tons, building for Sheffield Steel Corp., Kansas City, Mo., to Kansas City Structural Steel Co.

1200 tons, theater, Brooklyn, N. Y., to Hedden Iron Construction Co.

1200 tons, Canal street and Walworth avenue bridges for Cleveland Union Terminals Co., Cleveland, to Ft. Pitt Bridge Works.

1200 tons, waterside station, New York Edison Co., New York, to Hedden Iron Construction Co.

1100 tons, building for Chicago Motor club, Chicago, to Gage Structural Steel Co.; previously reported to American Bridge Co.

1020 tons, Electro Co. warehouse, New York, to McClintic-Marshall Co.

1000 tons, high school, Rochester, N. Y., to F. L. Hughes & Co.

950 tons, plant addition for Otis Elevator Co., Harrison, N. J., to Shoemaker Bridge Co.

850 tons, transmission towers, New England Power Construction Co., Ayer, Mass., to American Bridge Co.

617 tons, loft and office building, 149th street and Park avenue, New York, through Edgewater Construction Co., to Harris Structural Steel Co.

550 tons, viaduct for the Southern railway at Clouds, Tenn., to Virginia Bridge & Iron Co.

550 tons, digester house, 300 tons, warehouse, 250 tons, for Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., to Wisconsin Bridge & Iron Co.

546 tons, Van Nest shops extension, New York, to American Bridge Co.

450 tons, hotel, Hot Springs, Va., to American Bridge Co.

400 tons, work for Pacific Car & Foundry Co., Seattle, to Pacific Coast Steel Co.

400 tons, Dayton-Biltmore hotel, Dayton, O., to American Bridge Co.

376 tons, factory for Johns-Manville Co., Pittsburg, Calif., to Dyer Bros.

350 tons, building for Consolidated Water, Power & Paper Co., Appleton, Wis., to Wisconsin Bridge & Iron Co.

315 tons, bridge for Bangor & Aroostook railroad at Monticello, Me., to unnamed fabricator.

300 tons, building for Wright Aeronautical Corp., Paterson, N. J., to Igoe Bros.

275 tons, addition to Sheridan Trust & Savings bank, Lawrence avenue and Broadway, Chicago, to Worden-Allen Co.

250 tons, high school, Aurora, Ill., to Rochester Bridge Co.

250 tons, hangars for port commission, Oakland, Calif., to Moore Drydock Co.

220 tons, Frankford hospital nurses' home, Philadelphia, to Montgomery Iron & Steel Co.

210 tons, several projects including armory, Mansfield, O., to Massillon Bridge & Structural Co.

200 tons, New York, New Haven & Hartford railroad freight shed, South Boston, Mass., to New England Structural Co.

200 tons, high school, Liverpool, N. Y., to Union Structural Co.

200 tons, interstate horizontal swing span at Marinette, Wis.-Menominee, Mich., to Wisconsin Bridge & Iron Co. on bid of $44,450.

190 tons, mercantile building, Winston-Salem, N. C., through Ripple & Stevenson, general contractors, to Carolina Steel & Iron Co.

180 tons, bridge for Southern railway, to Virginia Bridge & Iron Co.

170 tons, road work at Cranford, N. J., to Igoe Bros., through T. Camillo & Co.
165 tons, cotton warehouse, San Diego, Calif. to National Iron Works.
165 tons, bridge for Central Railroad of New Jersey, Scranton, Pa., to American Bridge Co.
160 tons, Midland theater, Newark, O., to Massillon Bridge & Structural Co.
157 tons, Y. M. C. A., Dayton, O., to Massillon Bridge & Structural Co.
150 tons, Spec. P 519, Los Angeles, to McClintic-Marshall Co.
150 tons, station for Philadelphia Electric Co., Philadelphia, to Belmont Iron Works.
150 tons, city garage, Charlotte, N. C., through Southeastern Construction Co., to Carolina Steel & Iron Co.
125 tons, theater, Redwood City, Calif., to Golden Gate Iron Works.
115 tons, Pennsylvania railroad bridge, Cartersville, Ind., to American Bridge Co., previously noted with city unlocated.
114 tons, Boston & Albany railroad bridge, Brighton, Mass., to Boston Bridge Works Inc.

Concrete Bars

Sewage Work at Chicago Takes 4500 Tons—Activity Increasing—Prices Steady

FEATURING activity in the concrete bar market of the week was the letting of 4000 to 4500 tons for the fourth unit of sewage plant construction at Chicago. Other large tonnages were not numerous but the week maintained the high rate of contracting evidenced so far this year. Considering the tendency to softness in other finished steel prices, concrete bar quotations are steady.

REINFORCING BAR PRICES, PAGE 1023

Chicago, April 17.—An award of 4000 to 4500 tons of billet steel bars has been closed for the fourth unit of the Chicago sewage treatment works at Stickney, Ill. A number of large projects are pending, including bars for the Palmolive-Peet Co. building and the Daily News building. Speculative apartment house building has declined, but it is estimated this type of construction for the next few months will measure up well with last year so far as soundly financed projects are concerned. The minimum price of 2.30c for billet bars continues to be shaded for attractive business but 2.30c to 2.75c holds for small awards. Rail steel bars are 1.85c to 1.95c.

Boston, April 17.—Small orders, from 10 to 50 tons, feature the local market for concrete bars. A considerable amount of figuring is going on indicating a better outlook. The Lake Champlain bridge proposition is about ready for award and will embrace one of the best tonnages in structurals and concrete bars that has been let in some time.

Award for the 600 tons of concrete bars for the new building for Loft Inc. went to Concrete Steel Co. Burning of the Back Bay station of the New York, New Haven & Hartford railroad on April 15 means considerable concrete bar and structural tonnage to be placed soon, as reconstruction will start at once.

Buffalo, April 17.—Two lots of reinforcing bars averaging 180 tons have been placed but road contractors have made no move to cover the 4000 to 5000 tons pending in nearby road projects. A large proportion of the latter is for mesh but considerable bar tonnage for bridge and other public work is included. Ordinary lots of reinforcing bars are sold for shipment direct from steelworks stocks, prices averaging 2.40c. Buffalo.

New York, April 17.—Considerable portion of recent business in concrete reinforcing bars has gone to companies expected to furnish foreign bars. This has prevented the market on domestic bars from firming at the recently qubted level of 2.00c, base, Pittsburgh, on mill shipments. Domestic bars for mill shipment continue 1.95c to 2.00c, base, Pittsburgh, while the warehouse market here is 2.80c to 3.24c, base, delivered locally. Foreign bars are selling considerably lower.

Pittsburgh, April 17.—Concrete bar fabricators report awards confined to small lettings such as the Ebensburg, Pa., high school, 65 tons, and Bell Telephone Co. building, Wilkinsburg, Pa., 75 tons. A hospital at Cumberland, Md., will take 200 tons, and a bank and office building at Charleston, W. Va., at least 225 tons. Bids are extremely competitive but billet bars continue 1.85c to 1.90c, it being easier to obtain 1.90c on deformed bars than on regular hot rolled merchant bars.

Cleveland, April 17.—Concrete reinforcing bar sales of the week were composed largely of projects requiring under 50 tons. H. K. Ferguson Co. placed 140 tons with Ft. Pitt Bridge Works for a railroad station in Pennsylvania. New billet bars continue 1.80c to 1.85c, Cleveland, depending upon attractiveness of the tonnage. Rail steel is untested at 1.75c, mill, for reinforcing bar work.

Awards Compared

	Tons
Awards this week	14,658
Awards last week	6,438
Awards two weeks ago	10,403
Awards this week in 1927	2,820
Average weekly awards, March	7,761
Average weekly awards, 1928	7,853
Total awards to date, 1927	77,366
Total awards to date, 1928	117,796

CONTRACTS PENDING

12,000 tons, Cooper river bridge, Charleston, S. C.; bids in.
3000 tons, bridge over Lake Champlain, between Crow Point, N. Y., and Chimney Point, Vt.; bids early in May.
1800 tons, building for Kenova Valley bank, Charleston, W. Va.; bids in.
1600 tons, bridge over Susquehanna river at Sunbury, Pa.
1400 tons, apartment for Spruce Street Corp., Philadelphia.
1300 tons, Lake Shore hotel, Cleveland; bids in. Noted last week as involving 500 tons.
1100 tons, office building for North States Power Co., Minneapolis.
1000 tons, Jefferson hospital, Philadelphia.
1000 tons, coffee sheds, New Orleans, steel bids asked.
950 tons, Lehigh Valley bridge, Newark, N. J.
947 tons, bridge over San Joaquin river near Herndon, Calif.; bids in April 18.
900 tons, Parsons residence, West End, N. J.
700 tons, power plant for Phoenix Utility Co., to be erected at Waterville, N. C.
685 tons, I-beams for Los Angeles; bids in April 23.
606 tons, bridge over Sacramento river at Freeport, Calif.; C. J. Nystedt awarded general contract. Steel not yet placed.
600 tons, bridge over Smith river, Del Norte county, Calif.; Park-Schramm Co. low bidder.
600 tons, building for Crane Co., at Corwith, Ill.
600 tons, Kimberly mine building, McGill, Nev.
500 tons, Mystic Shrine temple, Altoona, Pa. Bids being prepared.
500 tons, Queets river bridge, Washington; bids in May 8.
400 tons, Central Library, Jamaica, Long Island, N. Y.; refigured.
400 tons, bakery for Cox Baking Co., Jamaica, Long island, N. Y.
400 tons, apartment house, Newbury street, Boston.
370 tons, plant building for American Smelting & Refining Co., at Monterey, Mex.
350 tons, three bridges for Oregon highways; bids in April 20.
300 tons, Riverside drive crossing, Glendale, Calif; bids being taken.
250 tons, board of trade temporary building, Chicago.
220 tons, bridge over McKenzie river near Coburg, Wash.; bids in April 20.
200 tons, highway bridge for state of New York.
160 tons, bridge for New Jersey state highway commission, Flemington, N. J.; bids asked.
150 tons, Thompson's Spa building, Summer street, Boston.
135 tons, Edwards Park overhead span on Janesville-Madison, Wis., state highway; bids close April 25.
100 tons, two schools, Mt. Lebanon, Pa.; bids close April 19.
100 tons, alterations, East Pittsburgh Savings & Trust Co. building; Miller Construction Co., Pittsburgh, low bidder.
100 tons, Ellwood City, Pa. hospital; bids close April 23.
100 tons, Allegheny Trust Co., Northside, Pittsburgh; bids being taken.
Unstated tonnage, state power plant, Poughkeepsie, N. Y.
Unstated tonnage, Fairfield hospital, Great Barrington, Mass.; Crowe, Lewis & Wick, New York, architects.

CONTRACTS PLACED

5257 tons, drainage improvement district No. 23, Los Angeles, through Will F. Peck, steel to unstated interest.
4000 to 4500 tons, billet steel, fourth unit Chicago sewage treatment works at Stickney, Ill., to unstated maker.
800 tons, building for Hudson Building Trust Inc., Boston, to Concrete Steel Co.
600 tons, loft building, Boston, to Concrete Steel Co.
300 tons, rail steel, grain elevator and also office building at 30 West Washington street, Chicago, to Inland Steel Co.
263 tons, paving from Globe to Safford, Phoenix, Ariz., to unnamed interest.
250 tons, Westchester County building, White Plains, N. Y., to Carroll-McCreery Co. Inc.
200 tons, apartment house in St. Louis, to Laclede Steel Co.
200 tons, garage, Chicago, to Concrete Steel Co.
200 tons, road work and several small jobs in

Pittsburgh and vicinity, to Concrete Steel Co.
200 tons, telephone building on Avenue U, Brooklyn, N. Y., to Carroll-McCreery Co. Inc.
190 tons, Auto Inn, Rochester, N. Y., to Kalman Steel Co., through Turner Construction Co., general contractor.
170 tons, Trico Products Co. addition, Buffalo, to Kalman Steel Co., through John W. Cowper Co., general contractor.
140 tons, 5-story passenger station for Monongahela railroad at Brownsville, Pa., through H. K. Ferguson Co., Cleveland, engineers, to Ft. Pitt Bridge Works.
135 tons, Temple university stadium, Philadelphia, to Baker Steel Co.
130 tons, rail steel, Edgewater hospital, Chicago, to Calumet Steel Co.
123 tons, Northern Pacific viaduct, Spokane, to Northwest Steel Rolling Mills.
100 tons, miscellaneous work including 65 tons for Ebensburg, Pa., high school, to Truscon Steel Co.
100 tons, addition to Virginia Mason hospital, Seattle, to Pacific Coast Steel Co.
100 tons, bridge, Dryden, Wash., to Northwest Steel Rolling Mills.
100 tons, warehouse, Shattuck avenue, Berkeley, Calif., to Gunn, Carle & Co.
100 tons, sewage disposal plant, Walla Walla, Wash., to Truscon Steel Co.
100 tons, including tunnel for Famour-Barr, St. Louis, to Missouri Rolling Mill Co.
100 tons, apartment house, St. Louis to Missouri Rolling Mill Co.
100 tons, 4-story addition to Cleveland clinic, 2045 East Ninety-third street, Cleveland, through Crowell & Little Construction Co., that city, contractor, to Paterson-Leitch Co.
Ellerbe & Co., St. Paul, architects.
100 tons, miscellaneous work, including 75 tons for Bell Telephone Co. building, Wilkinsburg, Pa., to Carlem Engineering Co.
100 tons, loft building at Church and Wall streets, New York, to Truscon Steel Co.

CONTRACTS PENDING

1220 tons, drainage improvement district No. 22, Los Angeles; bids opened.
800 tons, addition, Rochester Gas & Electric Co., Rochester, N. Y.; bids soon.
450 tons, bridge across Lake Champlain, N. Y.
270 tons, bridge on Fulton-Texarkana road, state highway 67, section 1, Arkansas; bids in April 18 by state highway commission, Little Rock, Ark.
225 tons, Kenova Valley bank and office building, Charleston, W. Va.; bids close this week.
220 tons, high school stadium, Buffalo; bids in this week.
100 tons, addition to Mine Safety Appliance Co. building, Pittsburgh; bids being compiled.
100 tons, Shadyside academy dormitory, Pittsburgh; bids closed April 18.
100 tons, hospital, Ellwood City, Pa.; bids closed April 24.
Tonnage unstated, for Friends school, Baltimore.
Unstated tonnage, state highway bridge across Raritan river, New Brunswick, N. J.
Unstated tonnage, Normandy apartments, Chicago.
Unstated tonnage, five roadbuilding and highway bridge projects in Arkansas; general contracts awarded March 16 at Little Rock, Ark.
Unstated tonnage, loading platform, produce yards, Eleventh and Twenty-fourth streets, Pittsburgh, for Pennsylvania railroad.
Unstated tonnage, Palmolive-Peet Co. building, Chicago.

Crane Sales Gain

New York, April 17.—Overhead crane business in March showed a sharp increase, according to figures compiled by the Electric Overhead Crane institute. New orders involved 102 cranes, against 69 in February, and were valued at $704,135, as compared with $518,770 in the month before. Shipments totaled 87; the number for February was 77. Unfilled orders on March 31 were 192 cranes, compared with 191 cranes on February 29.

Rails, Cars

Lull in Rail Buying General—Track Accessories Active—Few Attractive Car Inquiries Up

ACTIVITY in the railroad market of the week included about 14,000 tons of track accessories placed in the Chicago district, a few miscellaneous car orders and inquiries and purchase by Japan from an American mill of between 600 and 700 tons of rails. Chicago rail mills continue 90 per cent operations although secondary buying has lapsed.

RAILROAD TRACK PRICES, PAGE 1024

Chicago, April 17.—A lull has appeared in the active secondary buying of standard steel rails in the past several weeks. No tonnage was placed during the week and no important rail inquiry is out. Mills report that secondary rail buying started fully 60 days earlier this year than is customary. Already about 17,000 tons have been placed for secondary shipment. Orders for light rails are in miscellaneous carload lots. Rail mills are scheduled well ahead on pending orders, operating 90 per cent.

Track fastening sales were heavy during the week, the total having been 14,000 tons. Inquiry totals 4000 to 5000 tons. Track fastening production is at capacity in several lines and near practical capacity in others. The average operations are 75 to 80 per cent.

The only important car inquiry is 500 flat cars and 50 gondolas for the Southern Pacific, in addition to 250 automobile cars and 175 tank cars previously reported for that road. Chicago & Eastern Illinois has not definitely withdrawn its inquiry for 500 box cars but it is understood these may be built in the company's own shops.

Buffalo, April 17.—Bethlehem's Lackawanna rail mill will be modernized in July and August. Little additional rail tonnage will be placed for production at Lackawanna because of these plans, although the mill will be kept in practically full time operation on present orders until the reconstruction begins.

New York, April 17.—Car buying is light, with little outstanding inquiry. Early action is expected in some quarters on 119 coaches previously noted as pending for the New York Central.

Bethlehem Steel Co. has booked three miles of 122-pound groove rails for Tokio, Japan. Tokio now is inquiring for six miles of 91-pound T-rails. Nagoya, Japan, is taking bids of three miles of 91-pound high T-rails and accessories. Some rail inquiry is pending from China but owing to the financial condition in China not a great deal of interest has been shown.

Pittsburgh, April 17.—Occasional single carload orders continue to be received by light rail makers. These come from active coal mining sections, but are fewer this month than last. The price is $36.

Track accessory makers are in the midst of their busy season and see no real letup until the end of this quarter. They are operating at 75 per cent and shipping actively against contracts. New business is small but specifications involve good volume. Small and large spikes are 2.80c, with 3.00c applying on boat spikes. Tie plates have not been advanced from 2.15c.

CAR ORDERS PLACED

Atlantic Coast Line, 200 phosphate cars, to Tennessee Coal, Iron & Railroad Co.
Chicago, Rock Island & Pacific, three rail motor cars, to Cummings Car & Coach Co., with motor units to be supplied by Mack-International Motor Co., and eight gasoline-electric cars, to St. Louis Car Co., the motive units to be supplied by Electro-Motive Co.
Consolidation Coal Co., 150 mine cars, to Bethlehem Steel Co.
Richmond, Fredericksburg & Potomac, one cafe car, to Pullman Car & Mfg. Corp.
Standard Oil Co. of New Jersey, six steel box cars, to Pressed Steel Car Co.
Union Pacific, two gasoline-electric rail motor cars, to J. G. Brill Co.
Western Maryland, repairs to 500 freight cars, to its own shops.

LOCOMOTIVE ORDERS PLACED

Texas & Pacific railway, 20 locomotives, 15 to Lima Locomotive Works Inc., and five to Baldwin Locomotive Works.

CAR ORDERS PENDING

Baltimore & Ohio, ten mail compartment coaches and ten passenger cars.
Cleveland, Cincinnati, Chicago & St. Louis, 40 passenger cars.
Chicago, Milwaukee, St. Paul & Pacific, five flat cars.
Chicago, South Shore & South Bend, 15 interurban, five trailer cars; inquiry issued through Midland Utilities Co.
New York, New Haven & Hartford, 50 to 100 coach underframes.
St. Louis-San Francisco, 250 car bodies.

To Survey New England

Boston, April 17.—The American Society of Mechanical Engineers council recently appointed an advisory committee to make a survey of New England industries, emphasizing equipment.

Wire

Lighter Sales and Specifications Cause Some Shading—Jobbers Seem Well Stocked

SMALLER buying of wire and wire products has led to some concessions by makers, and efforts to hold quotations on nails have been only fairly successful. Jobbers seem to have sufficient stocks to care for demands of consumers without further buying. Some makers are decreasing production to avoid too much increase in stocks. Plain wire prices are fairly steady.

WIRE PRICES, PAGE 1024

Chicago, April 17.—Wire products sales dropped off slightly during the week. Buying is below the March rate, due chiefly to heavy stocks on jobbers' floors. Adverse weather in the Northwest has further delayed buying in that region. Some easiness in the price of $2.70, Chicago or Western mills, for wire nails is reported. Quotations of $2.65 to $2.70 are reported. Bright plain wire is reported steady at 2.55c.

Worcester, Mass., April 17.—Buying of wire and wire products continues steady. Prices are firm for second quarter. Advance specifications continue to increase, but in more limited lots, heavy business taken several weeks ago apparently being worked lower by consumers. Manufacturers' material is in fair demand. Mill stocks are now considered low and current production is about the same as in recent weeks.

Buffalo, April 17.—Demand for wire is holding well with prospect of large shipments this quarter to automobile makers and other consumers. Wireworks producing welded mesh for road work look for heavy buying the next 60 days and have stocks for quick shipment. Wire prices generally have been firm.

Pittsburgh, April 17.—Makers of wire products in this territory are maintaining quotations with difficulty in the face of willingness of two or three makers to extend certain customers through the present quarter on the basis of $2.55 for nails. Several are maintaining $2.65 and have all their customers under contract at that figure but so far have not received specifications. Jobbers mostly are well stocked and shipments from wire mills are on the basis of 50 per cent of capacity. Some have cut down their finishing capacity below 50 per cent, not wishing to augment stocks. Specifications on manufacturers' wire are more steady. The 2.50c price on plain wire is fairly firm.

Detroit, April 17.—Wire nail prices prices show variations, a $2 concession under the $2.65, Cleveland, price being common, but other wire products hold fairly well. April consumption parallels March. Manufacturing demand for light wire is better. Shipments of wire and rods for cold heading are at the best rate of the year.

Cleveland, April 17.—Increased specifications are being received by wire and nail producers. Makers selling in the Cleveland district are holding a firm market of 2.50c, Cleveland, for plain wire and $2.65 per 100-pound keg on nails. In the southern part of the state, and in districts available to Indiana mills, nails are being cut $1 to $2 a ton to jobbers.

Strip Steel

Large Users Shade Strip—Situation in Valley, at Detroit, is Weaker

STRIP PRICES, PAGE 1024

Detroit, April 17.—Large buyers of wide hot strip are understood to be shading 1.85c, Pittsburgh, deeply and handily. At least one maker of strip is not now seriously contending for business, so low have some mills gone. Weakness in autobody sheets is causing users to want further concessions in wide fender stock. Cold-rolled strip is 2.75c, Cleveland, to most users. Some buyers question the 4.20c price on fender stock and ask a $2 concession. Parts makers are placing more business, Budd having distributed about 2500 tons monthly.

Worcester, Mass., April 17.—Cold rolled stripmakers are booking a good volume of immediate business and advance buying is also showing a fair gain at steady prices. Quotations remain $3.05, Worcester, for listed widths and tonnage and this is generally being paid. A feature of the strip market is the wide range of demand and while individual orders are not large, the total is satisfactory and keeping production well up to capacity.

Pittsburgh, April 17.—Specifications against second quarter strip contracts are good. Automotive interests have bought cold rolled at 2.75c, but some small lots have brought the full 3.15c price. Makers claim the minimum they have accepted on hot strip is 1.90c, but automotive buyers at Detroit apparently have shaded this level.

Cleveland, April 17.—In the face of general weakening of the sheet market, and reported shading of hot and cold rolled strip prices in the Detroit district, sellers in the Cleveland territory are endeavoring to hold second quarter contract prices firm. Although mill books show a number of 1.90c to 2.00c, Pittsburgh, contracts for 6 to 12-inch widths of hot strip, prices are sagging and the flexibility of indefinite first quarter contracts is enabling some consumers to take out 1.75c and 1.80c tonnage. Cold strip is in light demand, and prices have been shaded to 2.80c and 2.85c, Cleveland.

Chicago, April 17.—Hot rolled strip producers have booked considerable tonnage at recent prices. Spot buying continues active. Specifications from automotive interests have tapered slightly, giving indication that they may have accumulated inventories from first quarter specifications. Hot rolled strip mill operations in this district are at practical capacity and backlogs run about three weeks. Chicago quotations are 2.30c to 2.50c for material under 3 inches, 2.20c to 2.30c for 3 to 6-inch strips, and 2.00c to 2.10c for 6 to 12-inch material.

Cold Finished Steel

Specifications Slightly Lighter but Production High

COLD FINISHED PRICES, PAGE 1023

Pittsburgh, April 17.—Lighter than a few weeks ago, specifications on cold finished bars are still sufficiently large to sustain schedules of 70 to 80 per cent in this territory. At least two important makers maintain 80 per cent operations. Most of the slight falling off in tonnage noted is in automotive lines. Other consumers are holding up well in their specifications. Sellers maintain 2.20c.

Detroit, April 17.—Specifications against cold finished bar contracts at 2.20c, Chicago, are a shade freer this month than last. Users' operating rates are predicted on the March gait and the second quarter easing-off may be a month later this year. Most users are covered by contract and new buying is less indicative of consumption than specifying.

Cleveland, April 17.—New cold-drawn bar business is light but specifications continue heavy. Considerable tonnage is moving to screw machine manufacturers, due largely to increased demands incidental to enlarged Ford production schedules. This change is having an effect also on consumption by manufacturers supplying other builders of low-priced automobiles. Prices on cold-drawn bars are firm at 2.20c, Pittsburgh, and 2.25c, Cleveland. Continuation of first quarter tonnage for shipment through April and into May is having a dampening effect on new buying.

Gary Paid $400,000

New York, April 17.—The annual salary of E. H. Gary as chairman of the United States Steel Corp. was $225,000, with a bonus arrangement that provided up to $175,000 additional, states the *New York World*. Settlement of the Gary estate is still in progress.

Nonferrous Metals

April Specifications Are Heavy—New Buying Is Small and Chiefly for Early Shipment—Prices Throughout List Are Holding Well

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin—New York Spot	Straits Tin—New York June	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
April 11	14.22½	14.35	13.90	51.87½	51.75	6.10	6.00	5.72½	23.90	9.75	35.00
April 12	14.22½	14.35	13.90	51.62½	51.37½	6.10	6.00	5.72½	23.90	9.87½	35.00
April 13	14.22½	14.35	13.90	51.75	51.62½	6.10	6.00	5.72½	23.90	9.87½	35.00
April 16	14.22½	14.35	13.90	52.12½	52.00	6.10	6.00	5.75	23.90	9.92½	35.00
April 17	14.22½	14.35	13.90	52.87½	52.62½	6.10	6.00	5.75	23.90	10.00	35.00

NEW YORK, April 17.—Specifications for April shipments of nonferrous metals are heavy. New buying is not large. Some business in tin for all positions was done the past week, however, while in other metals buying was mostly of small lots for early shipment.

Brass and copper products prices hold unchanged. Mills have fairly good order books, especially in brass. March statistics showed large shipments of all metals but with little in stocks.

Copper—Nearly all producers held at 14.25c, Connecticut, and 14.37½c, Midwest. A little metal was sold ⅛-cent under this level and some was offered at smaller concessions but the tonnage available at shaded prices was small. Some business was done at the full market prices. Users generally are covered for April and early May. Shipments in March were practically equal to output. Blister stocks were cut 5000 tons. Of total refined metal shipments 72,642 tons were for domestic users, not quite up to the tonnage of last March but higher than last year's monthly average.

Zinc—Prime western sold in a light way around 5.75c, East St. Louis, the past week. Some shading was done a few days ago and then the market became firmer. The ore market was unchanged at $38 a ton and sales were unusually large last week at more than 20,000 tons, while production remains at the recently curtailed rate. Shipments of zinc last month were 55,642 tons, of which 51,846 were for domestic users. The latter were the largest since November, 1926. The first quarter movement this year exceeded that of 1927 by about 7000 tons. Zinc sheet prices have been advanced to $9.00 per 100 pounds.

Tin—A fair amount of business has been done with comparatively light price fluctuations. Spot is ⅛ to ¼-cent higher than forward positions. The market still is in a state where it slips easily as soon as buying is absent, and rises quickly when consumers appear. Use apparently is close to output.

Lead—Output of lead in this country and Mexico broke all monthly records in March with the result that stocks of refined metal increased almost 10,000 tons to the largest in several years. Shipments are large but have not kept pace with refined metal output. Crude output was cut a trifle last month. Prices of lead recently were strong and now are steady at 6.00c, East St. Louis and 6.10c, New York.

Aluminum—Shipments of aluminum are moving well, mostly on purchases for early shipment. Prices are steady. —*Daily Metal Trade.*

Mill Products

Base prices cents per pound f.o.b. mill

SHEETS	
Yellow brass (high)	18.75
Copper, hot rolled	23.00
Lead, full sheets (cut ¼c more)	9.75
Zinc (100-pound base)	9.00
Aluminum, flat sheets, up to 10 gage, 3" to 72" wide	31.30
SEAMLESS TUBES	
Yellow brass (high)	23.62½
Copper	24.50
RODS	
Yellow brass (high, full turning)	16.50
Naval brass	19.25
WIRE	
Copper, car lots	15.75
Yellow brass (high)	19.25

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.25
Chicago	9.25 to 9.50
Cleveland	9.50 to 10.00
HEAVY YELLOW BRASS	
Chicago	6.75 to 7.00
Cleveland	7.25 to 7.50
ZINC	
New York	3.50
Cleveland	3.00 to 3.25
HEAVY COPPER AND WIRE	
New York	11.50 to 11.75
Boston	11.00 to 11.75
Chicago	10.75 to 11.00
Cleveland	11.50 to 11.75
RED BRASS BORINGS	
New York	8.25 to 8.50
YELLOW BRASS TUBING	
Cleveland	7.50
LIGHT COPPER	
New York	10.00 to 10.25
Chicago	9.50 to 9.75
Cleveland	10.00 to 10.25
LIGHT BRASS	
Boston	5.75 to 6.00
Chicago	6.25 to 6.50
Cleveland	5.50 to 5.75
ALUMINUM	
Clippings, Cleveland	17.50
Borings, Cleveland	9.50
Cast, Cleveland	13.00
Cast, Boston	11.50 to 12.00

Secondary Metals

Remelt Aluminum No. 12	17.00 to 17.50
Brass ingot, 85-5-5-5	12.25 to 12.50

Coke By-Products

Naphthalene Prices Respond to Buying—Sulphate Is Moving

New York, April 17.—Continued good buying of naphthalene by the drug trade has stiffened prices, with the range for flakes now 5½ to 6½ cents, works, and for balls 6½ to 7½ cents. Sulphate of ammonia is another item for which demand is holding up unusually well. The fertilizer industry has had a good season and has been specifying actively, in some cases amplifying contracts. In no case does it appear there will be any carryover. Prices on material for domestic account are strong at $2.35, delivered. Export buying, noted in fair volume a week ago, again is quiet.

Buying of toluol is well maintained. While no premiums have been reported on spot business, there, nevertheless, is little for this position available. Meanwhile, the market may be quoted at 35 cents, works, for material in tanks and 40 cents in drums. Pure and 90 per cent benzols are moving in good volume. Solvent naphtha and commercial xylol are relatively quiet. Phenol is 17 to 18 cents, works.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contracts
Pure benzol	$0.22	.....
90 per cent benzol	0.22	.....
Toluol	0.35	.....
Solvent naphtha	0.30	.....
Commercial xylol	0.30	.....
Phenol	0.17 to 0.18	.....
Per Pound at Producers' Plants		
Naphthalene flakes	0.05½ to 0.06½	
Naphthalene balls	0.06½ to 0.07½	
Per 100 Pounds Delivered		
Sulphate of ammonia	$2.35	

Coast Furnace Planned

A Scotch syndicate plans construction of a blast furnace and a steel plant on the Pacific coast, according to John MacLean, financial agent, Vancouver block, Vancouver, B. C.

Warehouse

Steady Improvement in Demand Reflected in Most Distributing Centers—Wider Adoption of Quantity Differentials Expected

SALES volume of iron and steel warehouses shows an increase in most distributing centers. Steady improvement in buying is assisted by resumption of outdoor building, increased rural demands and other activity incidental to spring movement.

A fair movement in most materials holds in the Boston warehouse market. Demand has not been sufficient in any one line to focus interest on it.

Detroit warehouses are benefitting from the delayed deliveries being made by the mills. Emergency buying by automotive interests is fair. Building steel demand shows little change, being disappointing. Prices generally are unchanged and volume shows a moderate increase over March.

Jobbers in the New York metropolitan district report steady improvement in demand, and those applying the quantity differentials recently announced express themselves as satisfied with the manner in which the schedules are working out. One large jobber reports that a number of his customers are combining their requirements of the products affected by the differentials. Thus they have been able to save on discounts, and the jobber on handling charges.

Warehouse trade in the Chicago district is affected adversely by prolonged winter weather in parts of the western territory. Prices are steady, with the exception of warehouse prices of wire nails. An extra of 10 cents has been made effective by one Chicago district jobber on a special brand of blue annealed sheets.

Business with St. Louis warehousemen is reported brisk, one leading interest reporting sales in the first week of April the largest for any similar period this year.

Demand for cold finished steel bars, tubes and similar products has increased in the Cleveland market. Jobbers of cold finished material report sales almost double those to date of last year.

Philadelphia jobbers have changed quantity extras initially established several weeks ago on black and galvanized sheets and now are charging on galvanized out of stock, 4.75c, base, delivered locally for 50 bundles or more, 5.00c for 10 to 49 bundles, and 5.45c for 1 to 9 bundles. The new prices on black sheets are 4.00c, base delivered locally, on 50 bundles or more, 4.25c on 10 to 49 bundles and 4.50c for 1 to 9 bundles. An extra of 25 cents per 100 pounds on corrugated sheets is added while 1 cent per pound additional is charged on broken bundles.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	2.50c to 3.31c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York† ††	3.20c to 3.25c
Philadelphia*	2.50c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.06c

IRON BARS

Baltimore	2.50c to 3.31c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York†	2.80c to 3.24c
Philadelphia*	2.50c
St. Louis	3.15c
Tulsa	3.75c to 4.06c

REINFORCING BARS

Baltimore	2.80c to 3.31c
Boston	3.265c to 3.50c
Buffalo	2.75c
Cincinnati	3.15c
Cleveland	2.20c
Detroit	3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl	3.05c
Los Angeles lcl	3.30c
New York	2.95c to 3.10c
Philadelphia	2.30c to 2.80c
Pittsburgh	2.90c to 3.175c
San Francisco cl	2.85c
San Francisco lcl	3.10c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	2.50c to 3.41c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.25c
Houston	3.25c
Los Angeles	3.30c
New York†	3.25c to 3.30c
Philadelphia	2.40c to 2.80c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

PLATES

Baltimore	2.50c to 3.41c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York†	3.25c to 3.30c
New York† (floor)	5.05c to 5.10c
Philadelphia	2.40c to 2.80c
Phila., 3/16-in.	2.60c to 3.00c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

No. 10 BLUE ANNEALED

Baltimore	3.00c to 3.66c
Boston, 3/16-in.	3.915c
Buffalo	3.70c
Chicago, to 40 in.	3.50c
Chicago, over 40 in.	3.60c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.50c
Ft. Worth	4.70c
Houston	3.90c
Los Angeles	4.00c
New York	3.90c
Portland	4.00c
Philadelphia	3.15c
Pittsburgh**	3.10c
San Francisco	3.75c
Seattle	4.00c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.20c to 4.56c

No. 24 BLACK SHEETS

Baltimore	3.60 to 4.00c
Boston	5.00c
Buffalo	4.20c
Chicago	3.95c
Cincinnati	4.05c
Cleveland	3.75c
Detroit	4.10c
Ft. Worth	4.70c
Los Angeles	5.10c
New York	3.90c to 4.10c
Philadelphia*†	3.75c
Pittsburgh‡	3.75c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.45c
St. Paul	3.95c
Tulsa	4.75c

No. 24 GALVANIZED SHEETS

Baltimore	4.30c to 4.75c
Boston	5.85c
Buffalo	5.05c
Chicago	4.80c
Cincinnati	4.90c
Cleveland	4.60c
Detroit	4.90c
Ft. Worth	5.75c
Houston	5.30c
Los Angeles	5.50c
New York	4.60c to 4.70c
Philadelphia*†	4.75c
Pittsburgh‡	4.60c
Portland	5.65c
San Francisco	5.50c
Seattle	5.75c
St. Louis	5.25c
St. Paul	4.90c
Tulsa	5.55c

BANDS

Baltimore	3.25c to 4.06c
Boston	4.015c to 5.00c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.65c
Ft. Worth	4.40c
Houston	3.65c
Los Angeles	4.25c
New York†	4.00c
Philadelphia	3.35c
Pittsburgh	3.60c
Portland	4.00c
San Francisco	4.00c
Seattle	4.00c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Baltimore	4.16c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	4.15c
Cincinnati	4.40c
Cleveland	3.65c
Detroit	4.15c
New York†	4.50c
Philadelphia	3.60c
Pittsburgh	4.50c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds, hexagons, squares	Flats, squares
Baltimore	3.25c	3.75c
Boston	3.45c	3.95c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.40c	3.90c
Philadelphia	3.35c	3.85c
Pittsburgh	3.60c	4.10c
Portland (a)	5.00c	.....
San Francisco (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.66c	5.16c

(a) Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pound lots	5.30c
Buffalo	5.85c
Chicabo (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.00c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	14.00c
Iron bars, rounds	6.25c

Flats and Squares

Baltimore, New York, Phila.	6.60c

*Plus quantity differentials. †Minus quantity differentials. ††Domestic bars. ‡10 to 24 bundles. **25 or more sheets. *†50 or more bundles.

Coast Concrete Active

Bar Sales Near Record for Year—Pipe and Plate Tonnages Pending

SAN FRANCISCO, April 14.—(*By Air Mail*)—Reinforcing steel bars were the most active product on the Coast this week, over 7000 tons being booked. Construction activity is beginning to pick up and a number of large projects are in prospect. Interest this week centers on the plate and cast iron pipe tonnages for the Wildcat and Sequoia aqueducts for the East Bay municipal utility district at Oakland, bids on which open April 20. Over 30,000 tons of cast iron pipe and 8000 tons of plates are involved.

Imports of foreign steel for January were:

	Jan. 1928 tons	Jan. 1927 tons
Pig iron	1391	850
Coke	4751	2594
Bars	4322	3675
Shapes	1936	2674
Cast iron pipe	1823	6013
Tubular products	1089	5117

Pig Iron and Coke

Sales and inquiries of pig iron and coke involve unimportant tonnages. A slight improvement in operations of jobbing foundries is noted. No change has been made in prices.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	24.00 to 25.00
*Dutch	24.50

*C.i.f. duty paid.

Bars, Plates and Shapes

Awards of concrete bars this week were the second largest this year. Lettings included 5257 tons for drainage improvement district No. 23 at Los Angeles. To date bookings in 1928 aggregate 34,923 tons, compared with 15,576 tons for the corresponding period in 1927. Bids were opened this week on 1220 tons for drainage improvement district No. 22 at Los Angeles. Prices on warehouse material in the bay district continue weak and 2.25c is still being quoted.

Only two projects of importance involving plate material are now up for figures. These include the Wildcat and Sequoia aqueducts at Oakland, over 8000 tons, bids on which go in next week, and 445 tons for siphons for the Kittitas canal project at Yakima, Wash., on which the Pittsburgh-Des Moines Steel Co. is low bidder. No action has been taken on the 700-ton inquiry for a carfloat for the Santa Fe railroad at San Francisco. Awards to date this year total 11,022 tons, compared with 24,381 tons for the same period last year. Prices are firm at 2.30c c.i.f.

Demand for structural shapes continues fair and a number of new projects have come out for bids. Awards this week aggregated 1116 tons, bringing the total for the year to 51,813 tons, compared with 56,001 tons for the corresponding period in 1927. Dyer Bros. took 376 tons for a factory at Pittsburg for the Johns-Manville Co. and Moore Drydock Co. 250 tons for hangars for the port commission at Oakland. Los Angeles is in the market for 685 tons of I-beams. Park-Schramm Co., Portland, is low on 600 tons for a bridge over the Smith river in Del Norte county. Plain material is firm at 2.35c c.i.f.

Other Finished Material

Only two awards of cast iron pipe were made. So far this year 23,636 tons has been booked, compared with 31,277 tons for the same period last year. Bids will be opened next week on 17,440 tons for the Wildcat aqueduct and on 13,250 tons for the Sequoia aqueduct in Oakland. If cast iron pipe is used, this will be the largest project ever placed on the Pacific coast. Long Beach has come into the market for 8744 tons, bids on which open April 17.

Northwest Trade Good

SEATTLE, April 11.—Prices of iron and steel are holding firm, steel plants report steady operations and building work is active.

Pig Iron and Coke

Foundry trade has improved fully 10 per cent in the last fortnight and operations as a whole are probably 60 per cent of capacity. Some plants are on overtime basis. Stocks of pig iron and coke are larger than usual and consequently there is little buying except in small lots for quick delivery. Prices are unchanged with Columbia $26 and $26.50, Burn India iron $25 and English coke $13.50

Bars, Plates and Shapes

Mill prices on these items are unchanged with bars and shapes firm at 2.35c and plates steady at 2.30c. Reinforcing material is firm at 2.20c in carload lots. Considerable tonnage is to be placed but buyers are holding off, evidently with the expectation of lower prices. Local mills state present levels will be maintained. Awards this week included a number of jobs of less than 100 tons, also the following: To Northwest Steel Rolling Mills, 123 tons for the Northern Pacific viaduct at Spokane and 100 tons for the Dryden bridge at Wenatchee; to Pacific Coast Steel Co., 100-ton addition to Virginia Mason hospital, Seattle.

Pacific Car & Foundry Co. this week closed for building 250 steel underframe cars for Chicago, Milwaukee, St. Paul & Pacific railroad, to be constructed at the local plant. About 1500 tons of plates and structurals, equally divided, will be required. Half of this material will be furnished by the Pacific Coast Steel Co., Seattle, and the remainder will be awarded to eastern interests but is not yet placed. Plates pending include 400 tons for the Kittitas government dam project, bids opened this week.

No large structural awards were announced this week but new inquiries include 500 tons for the Queets river bridge, Washington, bids May 8, and three state highway bridges in Oregon involving about 350 tons of steel, bids April 20.

Finished Materials

Jobbers report an average volume of business with improved demand from agricultural territory. The lumber industry is buying sparingly. Prices are unchanged with the exception of coil chain, which has been reduced 30 cents per 100 pounds, in line with mill prices.

Bids are in for the Oak Harbor, Wash., water improvement involving 132 tons of pipe and a 60,000-gallon steel water tank with 100-foot tower. Pittsburgh-Des Moines Steel Co. was low bidder for the latter.

Hold Welding Conference

Under the auspices of its national welding committee, the Association of Iron and Steel Electrical Engineers will conduct its annual welding conference at Cleveland, April 20. Headquarters will be at Hotel Statler. Events of the program include meetings of the board of directors and welding committee in the morning; inspection trips to the plants of the Cleveland Crane & Engineering Co. the Lincoln Electric Co. in the afternoon; and a dinner meeting in the evening. At the latter James F. Lincoln, vice president and general manager, Lincoln Electric Co., will read a paper, "Arc Welding Is selling Steel."

Shape Orders Decline

Washington, April 17.—New orders for structural shapes in March totaled 202,251 tons, dropping 6000 tons from the February total, the department of commerce statistics show. Operations were at 69 per cent of capacity.

New Responsibilities of Farrell Approved

New York, April 17.—At their annual meeting at Hoboken, N. J., yesterday, stockholders of the United States Steel Corp. sanctioned changes in by-laws, previously approved by directors, making the president the chief executive officer under the direction of the chairman of the board and chairman of the finance committee. Authorization was also given to increasing membership of the finance committee from eight to nine and permitting annual meetings to be held in New York.

Thomas W. Lamont, of J. P. Morgan & Co., was elected director, succeeding the late E. H. Gary. George F. Baker, E. J. Buffington, James A. Farrell and J. P. Morgan, with Mr. Lamont, were elected directors for three years. Nathan L. Miller, Percival Roberts Jr. and Mr. Morgan were made a committee to administer the corporation's profit-sharing plan.

Myron C. Taylor, new chairman of the finance committee, presided. It was the first meeting in 26 years that Judge Gary was not in the chair. A tribute to him was unanimously adopted. Mr. Taylor omitted discussion of steel business conditions but expressed his sense of deep responsibility toward stockholders and employes. A resolution of confidence in the present leadership of the corporation was unanimously adopted by the 125 present.

Sheet Output and Sales Gain in March

Pittsburgh, April 17.—Increases in sheet sales, production and shipments were registered in March by producers reporting to the National Association of Sheet and Tin Plate Manfacturers. Production and shipments were larger than in any month in more than a year, and sales were larger than any other month of the first quarter. March production amounted to 366,127 tons; shipments 359,532 tons, and sales 399,441. A comparative table follows:

	Net tons March 1928	Per cent of capacity	Net tons Feb. 1928	Per cent of capacity
Sales	399,441	112.4	266,210	79.5
Production	366,127	103.0	330,565	98.7
Shipments	359,532	101.1	298,420	89.1
Unfilled tonnage as of April 1 and March 1..	675,196	189.9	667,054	199.2
Approximate finished stock on hand awaiting shipment..	110,702	31.1	.....	.....
Approximate in stock, unsold..	53,144	15.0	.....	.....

The total number of hot mills in the United States at present is 721, which had a capacity for March of approximately 492,150 tons. The percentage of the capacity to which the above figures relate is 72.3.

A comparative table of sales, production and shipments by months follows:

	Sales	Production	Shipments
January, 1927	261,357	256,856	239,019
February	241,951	282,171	261,412
March	345,900	359,340	338,436
April	292,965	316,100	300,858
May	212,337	309,360	302,759
June	224,321	300,706	281,395
July	230,715	237,243	252,034
August	177,647	266,645	266,713
September	258,427	220,919	230,443
October	234,358	245,765	232,626
November	344,519	232,041	224,789
December	530,197	260,130	221,689
January, 1928	302,921	316,541	274,126
February	266,210	330,565	298,420
March	399,441	366,127	359,532

Distribution Conference Is Proposed

The Bolt, Nut and Rivet institute, 311 Ross street, Pittsburgh, of which Charles J. Graham is president, is distributing a booklet outlining a plan for a national meeting between the leading jobbing, mill supply and industrial interests for a discussion of selling and distribution as related to the hardware jobbing and mill supply field.

Since 1927 the institute has followed a plan which eliminates the manufacturer as the distributors' leading competitor and has helped stabilize the market. In practically every large jobbing center a committee has been set up, a prominent jobbing executive acting as chairman. The chairmen of 34 such committees and representatives of industries interested in the hardware jobbing and mill supply fields would be invited to a general conference, which would not be limited to the problems of the bolt, nut and rivet industry.

Name Two Vice Presidents of Steel Corporation

New York, April 17.—Thomas W. Lamont, of J. P. Morgan & Co., was elected an alternate member of the finance committee of the United States Steel Corp. at a meeting of directors today.

Directors also appointed, effective June 1, two additional vice presidents: I. Lamont Hughes, vice president of Carnegie Steel Co., and E. P. Thomas, president of the United States Steel Products Co. Under supervision of James A. Farrell, president and chief executive officer, Mr. Hughes will direct the manufacturing operations of subsidiaries producing iron and steel and Mr. Thomas will exercise jurisdiction over marketing of iron and steel products.

The board also ratified appointment of W. A. Forbes and Harold L. Hughes as two additional assistants to the president. Successors to I. F. Hughes and Mr. Thomas have not been announced.

McCleary New President of Republic

Directors of Republic Iron & Steel Co., meeting in New York Wednesday for the annual election of officers, chose practically a new list. This followed the resignation of President Thomas J. Bray a few days ago. Mr. Bray, Harry L. Rownd and H. W. Croft, president, of Harbison-Walker Refractories Co., were elected directors, April, 11.

Elmer T. McCleary, vice president of Youngstown Sheet & Tube Co. in charge of operations of its eastern plants, was elected president of the Republic company to succeed Mr. Bray. Harry L. Rownd was chosen vice president in charge of finances, he having been secretary and treasurer and later vice president and treasurer since Oct. 23, 1907.

Harry T. Gilbert, vice president and former general manager of sales of the Sharon Steel Hoop Co., was elected vice president of the Republic company in charge of sales.

Both Messrs. McCleary and Gilbert will be also chosen directors of the Republic company. Another new director of the Republic company will be John T. Harrington, president of Trumbull Steel Co., who also will be chosen a member of the executive committee.

Executive offices of the Republic company will be removed to Youngstown, and Chairman John A. Topping relieved of some detail responsibilities. It is understood the steps incident to final absorption of properties of the Trumbull company by the Republic company will be taken from now forward.

Pig Iron Prices Steady

(*Concluded from Page* 1025)

ham. Many melters say they have much business in sight, but are not showing a tendency to change their policy of buying beyond a few weeks' requirements.

Philadelphia, April 17.—Further sales of basic iron make a total of 30,000 to 35,000 tons of basic sold to three consumers in this territory in the past ten days. The market for this grade continues around $19.25, delivered. The eastern Pennsylvania furnaces sold about 1500 tons of low phosphorus. Lorain Steel Co. has not yet closed on 1000 tons of low phosphorus. Foundry demand is restricted to small tonnages. The Lavino Furnace Co. is planning to blow out its Mariette stack for relining, and will blow in its Reusens furnace at the same time on ferromanganese.

Iron Ore Prices Reaffirmed

Fourth Consecutive Season for Present Levels—Ford Company Buys 400,000 Tons of Basic and 35,000 Tons of Foundry Grades—Other Large Sales in Open Market —Prices and Carrying Charges Show Longest Period of Stability

PRICES of Lake Superior iron ore have been reaffirmed for the fourth consecutive season, the longest period of an unbroken price level in the history of the industry. The Ford Motor Co., which has been leading in open market purchases for several years, again placed the first orders, following which other substantial tonnages were booked by the independent producers at Cleveland.

The Ford company's inquiry this year called for 280,000 tons of basic ore, suitable for the making of basic iron; 65,000 tons of foundry; 65,000 tons of manganiferous and 25,000 tons of silicious. In placing its orders, however, it increased the amount of basic ore to 400,000 tons, which was booked with two Cleveland interests. It reduced the amount of foundry ore from 65,000 tons to 35,000 tons; eliminated the 65,000 tons of manganiferous, and purchased only a boatload of silicious ore. The orders were placed Monday and Tuesday, and it is understood they were distributed among four producers.

The question was raised as to whether the Ford company actually pays what is referred to as "standard prices." Purchases in the open market do not amount to much over 1,000,000 tons in a season. Most of the ore is delivered to consumers on "long-term contracts," which provide for certain discounts under the "standard prices," or openly quoted market prices. Instead of making long-term contracts, the Ford company has been buying in "the open market." Its purchases are larger than are some of those made by other consumers under long-term contracts. Does it obtain a discount?

This question was asked sellers who took some of the orders, and the positive assurance was given that the Ford company prices are the standard, openly quoted market prices.

These standard prices also applied on general business in the open market Tuesday. One order called for 100,000 tons. The market is fairly active. Close to 1,000,000 tons have been booked.

The prices are as follows: $4.55 for old range bessemer ore; $4.40 for Mesabi bessemer and old range nonbessemer, and $4.25 for Mesabi nonbessemer, per ton, delivered at lower lake ports, for the base grades containing 51½ per cent iron natural. Prices on the special grades also are the same as last year.

An important sidelight on the Ford transaction is the fact that the company mines considerable iron ore for its own use; it understands costs.

Mesabi nonbessemer ore is $2.30 a ton, or 35 per cent below its peak price of $6.50 in 1921. It is 87 cents or 17 per cent below the average price for the preceding ten years, and 36 cents, or 8 per cent, below the average of the preceding five years.

This point in regard to the ten-year average is interesting. For 25 years the ten-year average figure climbed steadily upward. Relatively high prices during the war period continued to affect the ten-year average. The ten-year average now is being released from war-time influence, and is turning downward.

Mesabi nonbessemer ore is chosen for the foregoing comparison because 68 per cent of all the ore shipped from the Lake Superior district is nonbessemer, and 45 per cent of all the ore is Mesabi nonbessemer. Its price curve is practically the same as that for all standard grades.

The price of this grade of ore is $2.51 at the mines, only 1 cent above what it was in 1910, and only 6 cents over 1907. Freight from mine to lower lake ports absorbs $1.74 of the price to the consumer. The upper-lake rail freight rates and the vessel rates also have shown a long period of stability. The ore producers have been enabled to offset unfavorable factors by labor saving machinery.

Lake-carrying rates have not been determined for 1928, but are likely to continue unchanged, in which case this would make the fifth consecutive year for them.

Iron Ore Unit Values

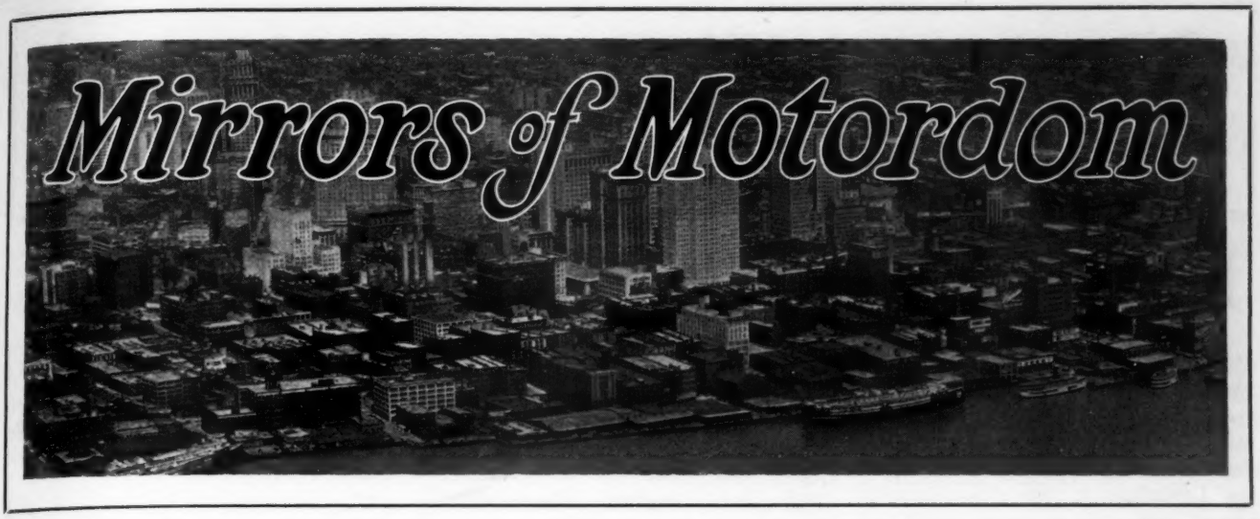
	OLD RANGE		MESABI	
	Bessemer	Non-Bessemer	Bessemer	Non-Bessemer
	Cents	Cents	Cents	Cents
1928	8.835	8.544	8.544	8.252
1927	8.835	8.544	8.544	8.252
1926	8.835	8.544	8.544	8.252
1925	8.835	8.544	8.544	8.252
1924	11.364	10.680	10.909	10.388
1923	12.818	12.233	12.364	11.942
1922	11.909	11.262	11.454	10.971
1921	12.818	12.233	12.364	11.942
1920	14.636	14.175	14.182	13.883
1919	12.818	12.233	12.364	11.942
1918*				
Oct. 1	13.182	12.621	12.727	12.330
July 1	12.727	12.136	12.273	11.845
Apr. 1	11.909	11.262	11.454	10.971
1917	11.909	11.262	11.454	10.971
1916	9.181	8.349	8.727	8.058
1915	7.909	6.990	7.455	6.699
1914	7.909	6.990	7.455	6.699

*Figures for 1918 established by government.

Prices of Iron Ore and Pig Iron at Date of Ore Buying Movement, 1901 to 1928

Season	Date buying movement	Old range Bessemer	Mesabi Bessemer	Old range non-Bessemer	Mesabi non-Bessemer	Iron prices, Valley Bessemer	Iron prices, No. 2 Foundry
1928	April 16, 1928	$4.55	$4.40	$4.40	$4.25	$17.50	$17.25
1927	April 8, 1927	4.55	4.40	4.40	4.25	19.50	18.50
1926	March 17, 1926	4.55	4.40	4.40	4.25	21.00	20.50
1925	April 4, 1925	4.55	4.40	4.40	4.25	22.00	21.00
1924	March 24, 1924	5.65	5.40	4.90	4.75	23.00	22.00
1923	March 24, 1923	6.45	6.20	5.70	5.55	31.00	31.00
1922	June 9, 1922	5.95	5.70	5.20	5.05	25.00	24.00
1921	June 16, 1921	6.45	6.20	5.70	5.55	23.00	22.50
1920	Feb. 2, 1920	7.45	7.20	6.70	6.55	41.00	40.00
1919	April 28, 1919	6.45	6.20	5.70	5.55	27.95	26.75
*1918	Oct. 1, 1918	6.65	6.40	5.90	5.75	35.20	34.00
	July 1, 1918	6.40	6.15	5.65	5.50	35.20	33.00
	April 1, 1918	5.95	5.70	5.20	5.05	35.20	33.00
1917	Nov. 22, 1916	5.95	5.70	5.20	5.05	30.00	26.00
1916	Dec. 7, 1915	4.45	4.20	3.70	3.55	18.50	18.00
1915	April 19, 1915	3.75	3.45	3.00	2.80	13.60	12.75
1914	May 1,1914	3.75	3.50	3.00	2.85	14.00	13.25
1913	Nov. 19, 1912	4.40	4.15	3.60	3.40	17.25	17.50
1912	March 20, 1912	3.75	3.50	3.00	2.85	14.25	13.25
1911	April 21, 1911	4.50	4.25	3.70	3.50	15.00	13.75
1910	Dec. 24, 1909	5.00	4.75	4.20	4.00	19.00	17.25
1909	May 10, 1909	4.50	4.25	3.70	3.50	14.75	14.25
1908	June 15, 1908	4.50	4.25	3.70	3.50	16.00	15.00
1907	Nov. 5, 1906	5.00	4.75	4.20	4.00	21.50	21.50
1906	Dec. 5, 1905	4.25	4.00	3.70	3.50	17.25	17.25
1905	Feb. 1, 1905	3.75	3.50	3.20	3.00	15.50	16.00
1904	April 15, 1904	3.25	3.00	2.75	2.50	13.35	13.15
1903	March 20, 1903	4.50	4.00	3.60	3.20	21.50	21.65
1902	Feb. 1, 1902	4.25	3.25	3.25	2.75	15.90	15.90
1901	April 15, 1901	4.25	3.25	3.00	2.75	16.15	14.40

*Figures for 1918 established by the government.



Steel Orders Forecast Good Auto Output in May

* * * * * * * * *

Fear Present Rate Means Competitive Last Half

Detroit, April 17

AND still they roll off the assembly lines! Two hundred and thirty thousand passenger cars and trucks in January, 325,000 in February, 425,000 in March and the accelerator down to the floorboard on the fifteenth of April. Specifications for finished steel to be shipped by the mills in May and reappear on wheels in June foreshadow no lessened pace.

Adjustments, of course, are in process and prospect but the balance is undisturbed. Buick production, at 700 to 750 units daily, is tapering gently as its model year wanes. Oakland-Pontiac, with its new additions at Pontiac tied in, aims at 25,000 units this month. Stocking dealers' floors with their new models will occupy Graham-Paige and Dodge Bros. for some time. The fervor for the new Hupps continues pleasingly intense to the builder.

Neither Chevrolet nor Whippet has yet had to turn out for Ford, and it may be sixty days before the latter honks for the road. In April as in March Chevrolet plans to pass 100,000 easily, while Whippet at 1100 or more daily is breaking its records. Ford is hovering around 2000 daily and is farming out parts orders as rapidly as machine setups and cost figures warrant. In London last week Mr. Ford observed that he now has more men building machinery than cars.

* * *

WHETHER the country can absorb transportation at the rate it is being evolved disturbs some, and within the automobile industry itself a closer check on dealer capacity is being maintained. In one instance a low-priced car maker appears to be over-running demand but hesitates to slow down because the present gait is so compassionate with costs. A house-to-house canvass being conducted in some cities by one maker puts automobiles in the same merchandising class with brushes, kitchenware and lingerie. At this time few cars are being stored.

* * *

THESE balmy days of the first half year for the automotive industry only convince the doubters that the last half will provide a counterpoise in the most trenchant competition the industry has experienced. This school of thought fears that the first half gait is swift enough both to account for the normal increase in the country's automobile buying power and to anticipate some business that normally would fall into the last half. In addition, the presidential election and a reaction in the stock market might prove a damper.

Not without a struggle will makers consent to overhead per unit rising as production goes down. To some interests who were down for the count of nine, financially, the first half is proving a lifesaver. Sensing the trend toward smaller cars as roads improve and traffic congests, the small-car field has been invaded by makers who previously scorned anything below $1500. And then there is always the specter of Henry Ford in his real stride.

IN SIXTY days Ford should be delivering 3000 Model A's daily and by early fall attain the coveted 5000 mark. Then what? Perhaps the setup will be something like this:

Chevrolet and Whippet, with their tremendous first half output, will have considerable four-cylinder car demand satisfied. What remains they will turn over to Ford without a contest. Whippet is now announcing a low-priced six-cylinder companion to its four. Chevrolet's present model, it is reported, has been engineered for a six-cylinder power plant, which can be put into production on short notice. Lift the hood of a new Chevrolet and note the gap between the front end of the engine bloc and the radiator, ample to accommodate a longer engine.

Almost over night Ford would have the four-cylinder car field bestowed upon him, with his erstwhile competitors glorifying a six. But Ford contends that any car, four or six, up to $1000 is his competition. Those who have ridden in the new Ford or disputed the road with it find it difficult to believe that mere number of cylinders will outweigh performance.

* * *

LIKE policemen on a beat, General Motors cars are to travel in pairs. Oakland has its Pontiac and Cadillac its LaSalle and now, according to report, Buick and perhaps Chevrolet too will have their companions. One rumor is that Buick will sponsor an overhead valve straight eight. A new six, the De-

(*Concluded on Page* 1050)

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

TODD SHIPYARDS CORP., New York, has started work at its Robins plant, Erie basin, New York, on a large dry dock to cost about $2,000,000. It will provide facilities for 15 of the largest ships now entering New York and obliged to go elsewhere for drydocking. Of seven ships too large for the new drydock the Leviathan is the only American owned one and it alone would use American facilities. Rear Admiral Frederick C. Harris, United States Navy, retired, is in charge of design and construction. The approximate amounts of material to be used in the construction of the drydock are 50,000 cubic yards of concrete; 2500 tons of steel sheet piling; 3500 tons of structural and reinforcing steel; 4000 40-foot wood piles and 750,000 board feet of timber.

* * *

INDIANA TRUCK CORP., Marion, Ind., recently merged with the Brockway Motor Corp., New York, will continue under its own name and no radical changes will be made in production or personnel.

* * *

GLENN LOCOMOTIVE CO., specializing in the reconstruction of locomotives, has moved from Cincinnati to Indianapolis and is occupying part of the buildings of the Interstate Car & Foundry Co.

* * *

WHEELING MOLD & FOUNDRY CO., Wheeling, W. Va., has re-elected its directors, as follows: H. E. Field, C. C. Woods, Eugene Balsley, R. W. Hazlett, Henry M. Russell, D. A. Burt and H. C. Ogden.

* * *

TRUSCON STEEL CO., Youngstown, O., has re-elected officers as follows: President, Julius Kahn; vice presidents, W. C. Conger, Gustave Kahn, M. T. Clark, H. E. White, C. I. Auten, R. A. Plumb, M. Goldberg, V. C. Briody, O. W. Irwin, W. S. Guthrie; secretary, Day Krolick; treasurer, H. M. Butzel.

* * *

UNION METAL MFG. CO., Canton, O., has re-elected officers. Harry Ross Jones has been made chairman, Chester A. Orr president and general manager, W. A. Porterfield, vice president and general sales manager, Fred McGlashen secretary, E. C. Moore treasurer, V. D. Steiner assistant secretary.

* * *

AMERICAN RADIATOR CO. has opened a salesroom and warehouse at 79 Page boulevard, Springfield, Mass., in charge of L. R. Snelling. This office will cover distribution for western Massachusetts, Vermont and part of Connecticut.

* * *

ACME WELDERS & BOILER WORKS CO., 3530 West Seventy-third street, Cleveland, is planning expansion of its plant, building to begin about June 1. The new plant is expected to be ready for production before the end of the year.

* * *

WALTER GERLINGER INC., Milwaukee, has been incorporated to handle the business formerly conducted by Walter Gerlinger. Its line includes molding sands, core sands, sand blast sands, fire clay, fuel oil and other foundry supplies.

* * *

WHEELING STEEL CORP., Wheeling, W. Va., has re-elected directors whose terms expire this year. They are D. Alan Burt, Edwin C. Ewing, Edward Hazlett, Walter B. Higgins, Dwight H. Wagner and Alan H. Woodward.

* * *

COLONIAL STEEL CO., Pittsburgh, has opened a branch sales office at 375 Ellicott square, Buffalo, in charge of Edward P. Geary. L. O. Burrell and J. S. Smith are associated with this office. Its territory covers Erie, Pa., western New York and Ontario.

* * *

ASHLAND FIRE BRICK CO., Ashland, Ky., has elected officers and directors, as follows: President and general manager, E. H. Gartrell; vice president, John Russell; secretary and treasurer, E. M. Weinfurtner; directors, E. H. Gartrell, John Russell, E. C. Means, Charles Russe'l, E. M. Weinfurtner.

* * *

E I. DUPONT DE NEMOURS CO., INC., has begun the manufacture of nitric acid by the oxidation of ammonia at its dynamite plant near Birmingham, Ala. This is said to be the first commercial installation of this kind in the United States. The acid will be used in the manufacture of dynamite.

* * *

LOWENSOHN CONSTRUCTION CO., Cleveland, has moved its offices from Woodland avenue to the Newman-Stern building, 1740 East Twelfth street.

* * *

J H. WILLIAMS & CO., Buffalo, and the Husky Wrench Co., Milwaukee, manufacturers of open end and socket wrenches, respectively, have entered into a selling arrangement by which combination sets will be offered to the trade. No change in either company will be made by this arrangement.

* * *

LATROBE ELECTRIC STEEL CO., Latrobe, Pa., has re-elected officers, as follows: President, M. W. Saxman Sr.; vice presidents, C. W. Guttzeit and E. T. Edwards; secretary, M. W. Saxman Jr., treasurer, A. B. Baker; directors, the officers and G. E. Anderson, F. B. McFeely and A. N. Kemerer.

* * *

CENTRAL OHIO STEEL PRODUCTS CO., Galion, O., has completed its organization and has taken over all assets of the National Grave Vault Co. and the Galion All Steel Body Co. Officers of the new company are: President and general manager, G. L. Stiefel; vice president, S. K. Cunningham; secretary and treasurer, W. C. Mason; directors, the officers and T. J. McNichols, J. E. Casey and H. W. Todd.

* * *

STANDARD STEEL PROPELLER CO., Pittsburgh, manufacturer of airplane propellers, has elected officers and directors, as follows: President, Harry A. Kraeling; vice president, secretary and general counsel, John M. Haverty; treasurer, Thomas J. Ingram; directors, Harry A. Kraeling, John M. Haverty, Thomas J. Ingram, Samuel E. Diescher, Rudolph Berg Jr.

* * *

STEEL IMPROVEMENT & FORGE CO., Cleveland, expects to move into its new plant at 960 Addison road in June. Operations in the new plant, which will have double the capacity of the old works at 5003 Wind-

sor avenue, will begin about July 1. Considerable new equipment has been purchased, including air compressors, shear presses, etc. Modern coal, oil and other handling equipment will be used.

* * *

AMERICAN STEEL ABRASIVES CO., Galion, O., manufacturer of steel shot and steel grit, is undertaking enlargements to double capacity and carry larger stock.

* * *

BOURNE-FULLER CO., Cleveland, has moved its sales office at Detroit from 5-158-159 General Motors building to 5-128-129 in the same building.

* * *

DOEHLER DIE CASTING CO., New York, has removed its executive offices from Brooklyn, N. Y., to 386 Fourth avenue, corner of Twenty-seventh street.

* * *

SIMPSON SHEET METAL WORKS INC., New York, has taken a long term lease on a 1-story industrial building at 14 Dutch Kills street, Long Island City, N. Y.

* * *

FEDERAL STEEL CORP. is the new name adopted by the former Marks Fiske Zeiger Co., 126 South Artillery avenue, Detroit, as better descriptive of its business. Harry J. Marks is president.

* * *

STEVENS WALDEN-WORCESTER INC., Worcester, Mass., has opened an office and warehouse at 435 Bryant street, San Francisco, in charge of H. O. Barr. Distribution for the Pacific coast will be handled from this office.

* * *

LAMBERT MACHINE & ENGINEERING CO., Cleveland, has taken back full manufacturing rights for its boring mill, which had been sold to the Carroll Foundry & Machine Co., Bucyrus, O. The company's first boring mill was built in 1915 by David Lambert. Later it was sold to the Bucyrus company.

* * *

WELLMAN - SEAVER - MORGAN CO., Cleveland, has taken a contract for two combined coke pushers, coal levelers and door extractors for the South Chicago plant of the Youngstown Sheet & Tube Co. The contract was awarded by the Koppers Co., general contractor for the coke oven plant.

* * *

BASSICK CO., manufacturer of casters, has purchased the west side plant of the Columbia Phonograph Co. at Bridgeport, Conn. In addition to a plant in that city, the Bassick Co. also has works in Newark, N. J., and Meriden, Conn. The newly-purchased plant will provide 126,000 additional square feet of floor space.

* * *

GENERAL ELECTRIC SUPPLY CORP., a subsidiary of the General Electric Co., has leased the 7-story building occupying the block facing on Abingdon square, at Hudson and Greenwich streets, New York. The building contains 125,000 square feet of floor space. The Supply company has been located for the last ten years at the northeast corner of Sixth avenue and Thirteenth street, New York.

* * *

BLACK & DECKER MFG. CO., Towson, Md., has moved its Detroit offices to 11501 Woodward avenue. Larger and better suited quarters are available.

GRAY IRON MEN MEET IN MAY

New Institute To Be Discussed at Foundrymen's Convention at Philadelphia

THROUGH courtesy of the American Foundrymen's association, the Gray Iron institute which had its inception at a conference in Pittsburgh, March 13, will hold a meeting in Philadelphia, May 18. This date, the last day of the American Foundrymen's association convention and exhibition, was chosen to avoid conflict with other activities and to permit the largest possible attendance of gray iron foundrymen.

The meeting will be held in the convention hall of Philadelphia Commercial museum and will be called to order by B. H. Johnson, temporary chairman, who presided at the Pittsburgh conference. A speaker of national prominence, familiar with the problems of group action upon commercial and industrial problems, has been secured for this occasion. An invitation is extended to the proprietors of all classes of gray iron foundries, regardless of whether they make castings for their own use or for sale on a jobbing basis, to attend this meeting to present their ideas and suggestions.

The organization committee chosen at Pittsburgh held a meeting in Cleveland, April 10, and set up a tentative plan of procedure for action at the Philadelphia meeting. The principles enunciated by the resolution adopted at Pittsburgh have been clarified and enlarged to include the purposes for which the Gray Iron institute is set up. These articles are designed to remedy some of the evils which today confront the gray iron branch of the castings manufacturing industry. They form a basis of action which will permit the industry to cooperate in solving its immediate problems. These principles, which will be submitted to general discussion at Philadelphia, are:

(a) The promotion of sound business ethics in the industry, based on honor and integrity in manufacturing and selling castings by its members.

(b) The collection and distribution of information relative to the manufacture of gray iron castings.

(c) To study new methods for merchandising gray iron castings, to strengthen present markets, to develop new markets and to discover new uses for gray iron castings.

(d) The promotion of uniformity in methods of cost accounting.

(e) Research work to further improve the quality of gray iron castings and to increase their utilization in industry, co-operating with other research agencies toward that end.

(f) The stimulation, by co-operative effort, of the use and sale of gray iron castings.

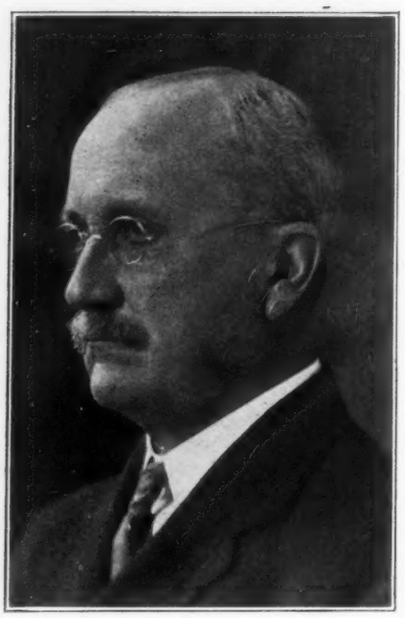
(g) The establishment and maintenance of standards of quality for gray iron castings.

(h) The foregoing clauses to be construed both as objects and powers; and it is hereby expressly provided that the foregoing enumeration of specific powers shall not be held to limit or restrict in any manner the powers of this corporation.

The organization committee appointed at Pittsburgh includes the following gray iron foundrymen: Walter L. Seelbach, chairman, Forest City-Walworth Run Foundries Co., Cleveland; A. E. Hageboeck, vice chairman, Frank Foundries Corp., Moline, Ill.; J. H. Bruce, Bowler Foundry Co., Cleveland; J. L Carter, Barlow Foundry Co, Newark, N. J.; H. S. Chafee, Builders' Iron Foundry, Providence, R. I.; A. E. Clarke, Des Plaines Foundry Co, Des Plaines, Ill.; J. D. Coltman, Bullard Machine Tool Co., Bridgeport, Conn.; Horace R. Culling, Carondelet Foundry Co., St. Louis; Fred Erb, Erb-Joyce Foundry Co., Detroit; W. J. Grods, Liberty Foundry Co., Milwaukee; John Hartman, Atlas Foundry & Machinery Co., Tacoma, Wash.; B. H. Johnson, Cresson-Morris Co., Philadelphia; Angus Macdonald, Snead & Co., Jersey City, N. J.; Don McDaniel, Hamilton Foundry & Machine Co., Hamilton, O.; Edward B. Sherwin, Chicago Hardware Foundry Co., North Chicago, Ill.

Industrial Men in the Day's News

William LeRoy Emmet, Inventor of the Mercury Vapor Turbine



AS INVENTOR and developer of the fuel-saving mercury vapor turbine his position in industry is well established.

IN ADDITION to this, he is given credit for the furtherance of many other important commercial projects, including electric ship propulsion.

HE HAS an intense interest in boys, many of whom he has helped through school and into suitable niches in the industrial world.

IF WILLIAM LEROY EMMET, engineer of General Electric Co., Schenectady, N. Y., had done nothing but invent and develop the mercury vapor turbine, he still would be destined to take an important place among benefactors of mankind. A 2000-kilowatt mercury turbine has been operating with great success for over a year and a new 10,000-kilowatt mercury turbine is now under construction. These turbines afford large fuel savings compared with the best that can be done with steam alone. However, he has been responsible for many other departures, including the electric propulsion of ships, large gear reduction systems, and the electric oil switch.

Mr. Emmet was born at Pelham, N. Y., in 1859. He was educated in schools in Canada and Maryland and at the United States naval academy, Annapolis, Md. He served in the navy as junior lieutenant and later as navigator on the U. S. S. JUSTIN. Leaving the sea he entered the service of the Sprague Electric Railway & Motor Co. and later became associated with the General Electric Co. His first work with this latter company was in the design and application of large alternating current machinery. He invented and developed the oil switch which is now an important part of all electrical installations. He discovered a principle of engine governor control which is essential to success in parallel operation of engine-driven alternating generators.

In 1901 he took up the study of the Curtis steam turbine, which had been experimented upon for three or four years but which had received unfavorable reports from several engineers. In a short time Mr. Emmet had succeeded in developing a large and successful industry, far outstripping the dream of any of his associates.

The development of the high speed steam turbine and generator had reached a point in 1908 which gave Mr. Emmet confidence in its application to ship propulsion. After several years of educational work with the navy department he was authorized to install his turbo-electric drive on the collier JUPITER. This proved a success and led to the adoption of the electric drive for all new large war ships in the navy.

Work in connection with electric propulsion of ships brought to Mr. Emmet's attention the need for large efficient gear reduction trains. Under his direction and much through his designing, the Alquist method of gearing was developed. It was in the midst of his ship activities that Mr. Emmet began the most important work of his life, namely, the development of the Emmet mercury vapor process. This is said to be the first serious attempt to extend the thermodynamic range afforded by steam into higher temperatures by the use of a different working fluid. Though at one time the task seemed hopeless and was about to be abandoned, Mr. Emmet continued with determination.

Mr. Emmet is a member of the National Academy of Sciences, the naval consulting board and of many engineering societies. He has received honorary degrees and many medals. He lives in the colonial residential section of Schenectady, where, much like his former associate, Dr. Charles Steinmetz, he surrounds himself with a group of interesting and promising boys. One of his chief recreations is golf. He plays with a vim and enthusiasm no less intense than that he displays in his work.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

THOMAS J. BRAY, for the past 17 years president of Republic Iron & Steel Co., Youngstown, O., resigned April 13. Mr. Bray had been connected with the Republic company since 1906, when he resigned as chief engineer of the United Engineering & Foundry Co. to become assistant to the president of Republic.

Mr. Bray was born in Pittsburgh

H. D. SAVAGE

May 1, 1867, obtaining his education there. He began an apprenticeship with the Lewis Foundry & Machine Co., Pittsburgh, and became chief draftsman. Resigning that position, Mr. Bray entered Lehigh university, Bethlehem, Pa., and was graduated in 1894 with a degree in mechanical engineering. He then became associated with the Ohio Steel Co.

In 1901 he became chief engineer of the United Engineering & Foundry Co. From assistant to the president in charge of construction, his first official connection with the Republic company, Mr. Bray advanced to vice president in charge of operations, the appointment being made in October, 1907. He retained the vice presidency until April, 1911, when he was chosen president, succeeding T. W. Guthrie. Mr. Bray also has served as a director of Republic and as president of various subsidiary companies. He was re-elected a director at its annual meeting April 11.

T. J. Bray Jr., son of the former president, has been appointed assistant general superintendent, succeeding Caleb Davies Jr., who has resigned to become associated with the American Tank Car Co., Pittsburgh.

* * *

J. M. Hicks has become associated with Stearns Conveyor Co., Cleveland.

* * *

L. W. Cady, electrical engineer, has become associated with James H. Herron Co., Cleveland.

* * *

Jack Singleton, general manager and chief engineer of the Capital Iron Works, Topeka, Kans., for the past seven years, has resigned to become technical director of the American Institute of Steel Construction, New York.

* * *

Dwight Ruth, assistant treasurer of the Saranac Machine Co. and with that company for the past nine years, has resigned to become associated with the Moulds Brass Foundry, both of Benton Harbor, Mich.

Carter Cook will succeed Mr. Ruth at the Saranac company.

* * *

J. R. Poyser, sales manager of Doelger & Kirsten, Milwaukee, manufacturer of shears, has resigned, to take effect shortly. Mr. Poyser, prior to his five-year connection with the Milwaukee organization, had been secretary of the Canton Foundry & Machine Co., Canton, O., for 12 years.

* * *

John C. Spence, works manager, grinding machine division, Norton Co., Worcester, Mass., has resigned. He was a member of the board of directors and active in many other company affairs. He has been associated with the Norton Co. 22 years. He was graduated from the Worcester Polytechnic institute in 1906 and from there went directly to the Norton Co.

* * *

Charles H. Fowler, formerly with the Rust Engineering Co., Pittsburgh, has become associated with the contract department of H. K. Ferguson Co., Cleveland, construction engineer. Mr. Fowler has done engineering work for Fred T. Ley Co., New York, and for the Pittsburgh office of Truscon Steel Co. He is a graduate of Cornell university, Ithaca, N. Y., and an associate member of the American Society of Civil Engineers.

* * *

H. D. Savage, for many years vice president of Combustion Engineering Corp., New York, American subsid-

GEORGE T. LADD

iary of International Combustion Engineering Corp., has been elected president, succeeding Joseph V. Santry, who has resigned. Mr. Savage long has been identified with the development of pulverized fuel burning equipment and prior to his entry into that field he was active head of the Ashland Fire Brick Co. He was also the first president of the Refractory Manufacturers' association. In 1914 Mr. Savage became president of the American Arch Co. and two years later vice president of the Locomotive Pulverized Fuel Co. When the Combustion Engineering Corp. purchased the Lopulco Pulverized Fuel systems in 1920, Mr. Savage became associated with the organization as directing head of the pulverized fuel division.

George T. Ladd, who has been elected vice chairman of the board

of directors of Combustion Engineering Corp., is president of both the Ladd Water Tube Boiler Co. and the Heine Boiler Co.

* * *

James Bowron, chairman of the board of the Gulf States Steel Co., Birmingham, Ala., has returned from an African tour.

* * *

Jacob G. Joseph, president of the Buffalo Steel Co., Buffalo, has been elected a director of the Marine Trust Co.

* * *

Russell S. Begg, chief engineer of the Jordan Motor Car Co., Cleveland, has resigned to become associated with the Budd Wheel Co., Detroit.

* * *

Robert E. Belknap, who heads the Boston sales office of the Bethlehem Steel Co., of Bethlehem, Pa., recently was elected dictator of the New England Iron league, an association of iron and steel men with headquarters at Boston.

* * *

William C. Hays, formerly vice president and a director of J. H. Larkin & Co. Inc., Brooklyn, N. Y. has organized the Hays Steel & Wire Corp., with offices at Metropolitan and Woodward avenues, Brooklyn, to distribute general steel products.

* * *

Fred L. Holmes has been elected president of the Somersworth Foundry Co., Somersworth, N. H., succeeding William M. Bowman, whose death was announced in IRON TRADE REVIEW, issue of March 29. Harold M. Bowman is vice president of the company.

* * *

Carl F. Scott, manager of building equipment sales, General Electric Co., Schenectady, N. Y., has become associated with the Gurney Elevator Co., New York, as assistant sales manager. Mr. Scott is a graduate of Haverford college and entered the employ of the General Electric Co. in 1908.

* * *

Thomas G. Cox Jr., for four years associated with the Bethlehem Steel Co., Bethlehem, Pa., and recently in charge of pig iron sales at Boston, has resigned to join Curtiss & Jackson, investment bond house, Boston. Pig iron sales for the Bethlehem company at Boston hereafter will be in charge of G. H. Kratz, who has been connected with the Boston office during the past year.

* * *

Frederick A. Westphal has been appointed superintendent of the wire department now under construction of the Sheffield Steel Corp., Kansas City, Mo. Mr. Westphal, a graduate of the naval academy, Annapolis, Md., became associated with the American Steel & Wire Co., as foreman and wire rope engineer at its Worcester, Mass., plant. He resigned in 1922 to go with Jones & Laughlin Steel Corp. as assistant superintendent of the rod and wire department at the Aliquippa works. He remained there until March 15 this year.

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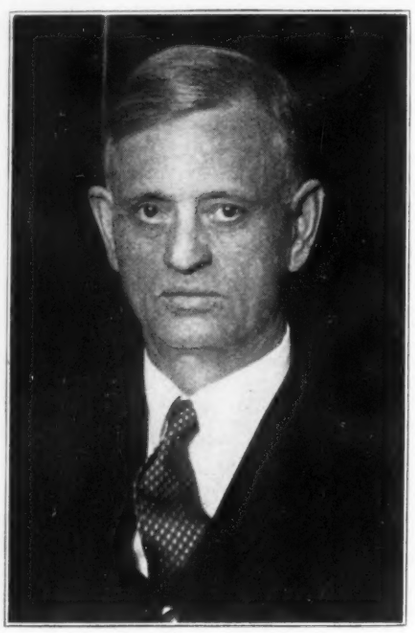
Edgar C. Felton, president of the Pennsylvania Steel Co., until it was taken over by the Bethlehem Steel Co., was the guest of honor at a



THOMAS J. BRAY

dinner at the University club, New York, April 13, to celebrate his seventieth birthday. Guests included W. H. Donner, president, Donner Steel Co.; R. W. Gillispie, vice president, Jeffrey Mfg. Co.; John C. Jay, J. & W. Seligman; Frank A. Robbins, general manager, Bethlehem Steel Co's Steelton plant; J. V. W. Reynders, president, American Institute of Mining and Metallurgical Engineers; F. W. Wood and Frank D. Carney.

* * *

H. B. Hazerodt, manager of the Detroit branch of Black & Decker Mfg. Co., Towson, Md., has resigned. J. H. Walker, for five years a salesman in that territory, has been appointed manager succeeding Mr. Hazerodt.

H. L. Balke has been assigned to the Kansas City, Mo., branch office of Black & Decker, covering the territory around Omaha, succeeding S. D. Swago. G. F. Parr has taken over the Buffalo office, formerly the territory of J. H. Hutton. G. N. McCarthy, going to the Buffalo office, succeeds H. B. Austin, who has been transferred to the Chicago branch. J. A. Murray, in Baltimore, succeeds Curtiss Watts.

Maintenance Engineers Inspect Crane Plant

More than 150 members of the Electrical Maintenance Engineers of Cleveland on April 11 were guests of the Cleveland Crane & Engineering Co., Wickliffe, O., in a plant inspection, dinner, and business meeting. On the plant inspection some of the equipment exhibited included a 5-ton crane, 80-foot span bucket handling crane with 2½-cubic yard bucket built for the United States Phosphoric Products Co., Tampa, Fla.; girders for a 120-ton, 56-foot, 8-inch span crane; a bridge for a 65-ton, 39-foot 6-inch span; all welded trolley; a 7½-ton all welded roller bearing equipped trolley; 65-ton trolley with 10-ton auxiliary hoist for power plant service; a motor operated sliding type switch; a hand propelled transfer bridge in operation; a 1000-pound pendent push button control electric carrier with motor operated tote box grab; a 1000-pound single speed rope control electric carrier, and a built-in track scale for weighing without rehandling. An all-welded roller bearing equipped, 10-ton traveling crane was exhibited in operation.

After dinner the engineers gathered in the company's restaurant to hear several talks. A. F. Anjeskey, sales manager of the tramrail division of the Cleveland company talked on tramrails and their part in handling materials, illustrating numerous installations by stereopticon slides. J. B. Shaver, sales manager of the crane division of the company, spoke on developments in crane design. His talk also was illustrated by slides showing welded and roller bearing crane and trolley equipment.

Institute Dates Set

The spring meeting of the American Iron and Steel institute has been scheduled to be held on Friday, May 25, at the Commodore hotel, New York. Details of the program will be announced later.

The annual business meeting of the institute will be held at the institute's headquarters, 75 West street, New York, May 7, for the election of directors and other matters.

British Steel Demand Is Active

Mills Working Nearly Full Time—Continental Products Practically Out of the Market —Substantial Increase Made in Iron and Steel Production—Exports Gain, Imports Drop—India Placing Orders for Galvanized Sheets

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, April 17.—Improvement in the British iron and steel market is indicated by the fact steel mills now are working nearly full time. An additional blast furnace at Middlesbrough has been blown in. Demand for pig iron on the West coast has picked up. Tire and axle manufacturers have orders for several months' work. Better orders are being received from India, especially for galvanized sheets. Continental steel is practically off the British market. Some tonnages of English pig iron are being sold at the Atlantic seaboard at prices equivalent to French domestic quotations.

British production of pig iron in March totaled 592,600 tons, compared with 545,000 tons in February and 650,500 tons in January. The number of blast furnaces in operation at the close of March was 150, six more than on Feb. 29. Steel output in March amounted to 793,300 tons. The month previous the production of steel was 745,000 tons while in January the steel output of British manufacturers amounted to 626,200 tons.

British imports of iron and steel in March totaled 271,526 tons, compared with 286,918 tons in February and 283,921 tons in January. Exports were 409,292 tons, against 317,036 tons in February. During the first month of this year exports amounted to 332,185 tons.

British Steelmakers Hold Home Market Better

BIRMINGHAM, Eng., April 5.—(*European Staff Service*)—The steel outlook has improved and mills have fair order books, especially those in the shipbuilding areas, several shipyards on Teesside having increased their production. Middlesbrough is able to record the best pig iron shipments in March since the coal strike. New continental business coming in has slowed down a little, but the home trade in pig iron is gradually being recovered and imports have practically ceased. Stocks are becoming negligible on the northeast coast, and the recent advance in No. 3 pig iron is well maintained. Scotland is a good customer

Sterling $4.88

for the product not locally consumed or required for export. Demand for hematite is not quite equal to production, but mixed numbers are steady at £3 10s ($14.08). Swedish ore, in consequence of the miners' strike, is dearer and is becoming scarce. There are possibilities that more furnaces will be required after the holidays.

In the Barrow area the sale of high-quality iron on which that district specializes, has become rather slow, but this is not unusual before the holidays, and stocks generally in that district also are diminishing. The Midlands and Scotland are good buyers, and some recent orders have included contracts for America. Prices are unchanged, and are likely to be steady for some time. Only one furnace is producing manganese and the price is steady at £13 10s ($65.88) for home customers and £13 5s ($64.66) for foreign.

The rail mills in the north of England have good orders and for the present are delivering good quantities of plates for shipyards, although shipbuilding orders tend to decrease.

Some fluctuation has taken place in Continental steel. A week ago a small reduction was announced by

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, April 16	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3, Silicon 2.50-3.00	$16.10	3 6 0*	$15.62	3 4 0	$15.62	3 4 0	$15.62	3 4 0
Basic	.....	.....	14.64	3 0 0	14.64	3 0 0	15.37	3 3 0
Basic-bessemer	17.08	3 10 0†	14.64	3 0 0	14.64	3 0 0	14.64	3 0 0
Hematite, Phosphorus 0.02-0.05	17.08	3 10 0	22.16	562.5*	.....	.....	17.08	3 10 0
SEMIFINISHED STEEL								
Billets	$28.06	5 15 0	$22.33	4 11 6	$22.33	4 11 6	$22.49	4 12 0
Wire rods	47.58	9 15 0	28.06	5 15 0	28.06	5 15 0	28.06	5 15 0
FINISHED STEEL								
Standard rails	$37.82	7 15 0	$31.11	6 7 6	$31.11	6 7 6	$31.11	6 7 6
Merchant bars	1.58c	7 5 0	1.14c	5 4 0	1.14c	5 4 0	1.17c	5 6 0
Structural shapes	1.61c	7 7 6	1.02c	4 12 6	1.02c	4 12 6	1.06c	4 16 0
Plates, ship, bridge and tank	1.77c	8 2 6	1.36c	6 4 0	1.36c	6 4 0	1.49c	6 15 0
Sheets, black, 24 gage	2.40c	11 0 0	2.31c	10 10 0	2.31c	10 10 0	2.18c	9 18 0
Sheets, galvanized, 24 gage, corrugated	2.89c	13 5 0	3.30c	15 0 0	3.25c	14 15 0	2.92c	13 5 0
Bands and strips	2.29c	10 10 0	1.32c	6 0 0	1.32c	6 0 0	1.18c	5 7 0
Plain wire, base	2.12c	9 15 0	1.54c	7 0 0	1.54c	7 0 0	1.60c	7 5 0
Galvanized wire, base	2.94c	13 10 0	1.98c	9 0 0	1.98c	9 0 0	2.04c	9 5 0
Wire nails, base	2.51c	11 10 0	1.62c	7 7 6	1.62c	7 7 6	1.87c	8 10 0
Tin plate, base box 108 pounds	$ 4.45	0 18 3	.....	.....	.....	.....	$ 6.83	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.10	3 6 0	$17.53	445(2)	$16.38	585	$18.67	78
Basic pig iron	.....	.....	18.91	480(1)	14.98	535	21.06	88
Furnace coke	2.93	0 12 0	5.91	150	5.18	185	5.15	21.50
Billets	28.06	5 15 0	21.87	555	23.80	850	27.99	117
Standard rails	1.74c	8 0 0	1.36c	755	1.43c	1,100	1.53c	140
Merchant bars	1.63c	7 10 0	1.22c	675	1.22c	935	1.49c	137
Shapes	1.72c	7 17 6	1.17c	650	1.17c	900	1.46c	134
Plates, ship, bridge and tank	1.88c	8 12 6‡	1.42c	790	1.43c	1,100	1.67c	153
Sheets, black, 24 gage	2.51c	11 10 0	2.74c	1,520	2.41c	1,850	2.40c	220
Sheets, galvanized 24 gage, corrugated	2.89c	13 5 0	3.42c	1,900	3.80c	2,925	3.82c	350
Plain wire	2.12c	9 15 0	1.71c	950	1.89c	1,450	2.34c	215
Bands and Strips	2.29c	10 10 0	1.42c	790	1.55c	1,185	1.72c	158

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.93) f. o. b. Ferromanganese £20 10s 0d ($100.04) delivered Atlantic seaboard, duty paid. German ferromanganese £15 0s 0d ($73.20) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

the Brussels exchange. Apparently this brought out some new business with the result that the return to higher prices has already been announced. Belgian billets are quoted at £4 10s ($21.96) Antwerp, equal to £5 10s ($26.84) delivered here, and sheet bars are £4 14s ($22.93) or £5 13s ($27.57) delivered. A rise of 3s 6d ($0.85) has taken place at Belgian No. 4 best, equal to £7 11s 6d ($36.96) delivered in the Midlands. This is a different material to No. 3, being genuine fibrous wrought iron, whereas No. 3 admittedly contains 60 per cent of steel scrap, and is unsuitable for many purposes.

Difficulty of getting deliveries of semifinished steel has caused reversion to British, and nearly all steelworks in this country have been turning out good quantities of billets and bars. The recognized British price for rerolling billets is £5 15s ($28.06) unless of superior quality, and this is only a few shillings above the Belgian figure.

Railways have placed further orders for railway material, largely for rolling stock construction, and this is proving a useful standby for the mills in the Midlands.

Steelmakers in Scotland report themselves short of orders, and neither plate nor section mills are fully employed.

In the Black country trade is on the upgrade mainly because nut and bolts, tube, lock and chain and cable makers are all fairly busy. Demand for best iron continues strong, chiefly from engineers, and much skelp is needed for tubemaking, although large importation of finished tubes from Germany continues a most disquieting feature.

Galvanized sheets continue on the basis of £13 2s 6d ($64.05) to £13 5s ($64.66), though even the lower price is not a firm figure.

Further progress has been made in the tin plate trade and order books are now satisfactory. The price continues at 18s ($4.39) to 18s 3d ($4.45).

Cockerill Adds Capital

Brussels, March 28.—(*European Staff Service*)—Stockholders of Societe John Cockerill, Seraing, Belgium, held an extraordinary meeting March 26 to discuss a proposal of capital increase. A resolution was adopted to create 75,000 new shares at 900 francs ($25) each, with a view to increasing the working fund, making additions to the equipment of the plant, and taking an interest or increasing the control in certain associated companies.

In the report of Léon Greiner, chairman of the company, it was stated that the turnover in 1922, when the last capital increase took place, was 92,000,000 francs ($2,550,000); in 1927 the turnover was 550,000,000 francs ($15,250,000). It is hoped that by bringing certain modifications to the equipment of the works a decrease in production costs will result. The scheme foresees increasing recuperation and use of by-products from the coke ovens, establishment of a modern cement factory, transformation and development of rolling mills, extension of equipment in various mechanical workshops, construction and installation of a 10,000-horsepower Cockerill blast furnace gas engine for the electric power house, which will bring the total power of the unit to 50,000-horsepower and will enable an extensive use of blast furnace gas. It also is intended to add one unit to the company's fleet.

France Makes Highest Ore Production

Paris, March 30.—(*European Staff Service*)—Output of iron ore at French mines in January was the highest recorded, the previous high mark having been reached in October, 1927. Stocks at the end of January were the highest registered to date. The following table gives comparisons in metric tons:

Mon. ave.	Production	Stocks at end of month
1913	1,826,500	.....
1925	2,943,204	.....
1926	3,269,033	.....
1927	3,723,200	.....
1928		
Jan.	4,122,386	2,668,569

French Commerce Lower

Paris, March 30.—(*European Staff Service*)—Exports of pig iron from France in January were 57,496 metric tons, compared with 58,926 tons in December, 1927. Exports of steel, including ingots, semifinished steel, rolled products, and scrap, were 328,269 metric tons against 339,699 tons in December, 1927. Imports of pig iron in January were 2472 metric tons, compared with 5988 tons in December, and imports of steel products, as specified above, were 3663 tons in January and 6860 tons in December. The following table gives comparisons in metric tons:

	IMPORTS		EXPORTS	
Mon. ave	Pig iron	Steel	Pig iron	Steel
1925	2,693	11,703	58,835	272,270
1926	1,990	11,930	58,545	264,530
1927	3,230	6,490	69,640	363,305
1928				
Jan.	2,472	3,663	57,496	328,269

French Steel Rate Is New High Record

Paris, March 30.—(*European Staff Service*)—The output of steel ingots and castings in France in February continued at a high rate, slightly under that of January, which was the highest monthly output registered to date. It should be noted, however, that the daily average in February was 25,450 metric tons, compared with 24,290 tons in January, so that taking account of the shorter month the February rate was, in fact, the highest registered to date. The February output was composed of 724,000 tons of steel ingots and 14,000 tons of steel castings. It included 519,000 tons of basic bessemer, 203,000 tons of open hearth, 9700 tons of electric, 4500 tons of acid bessemer, and 1800 tons of crucible steel.

February output of pig iron included 615,000 tons of basic bessemer, 100,000 tons of foundry, 7000 tons of gray forge, 46,000 tons of hematite pig iron, and 17,000 tons of ferro-alloys. The following table gives figures for the first two months of 1928, compared with the monthly averages of the three preceding years and 1913, in metric tons:

Mon. ave.	Act. fur. on last day	Pig iron	Steel ingots and castings
1913*	131	433,940	390,580
1925	148	707,840	620,540
1926	155	785,965	702,500
1927	142	774,785	689,610
1928			
Jan.	144	809,000	753,000
Feb.	149	785,000	738,000

*In pre-war boundaries.

British Export Prices on Lower Level

London, March 26.—(*European Staff Service*)— Board of trade returns for February, 1928, give average British export prices per gross ton for a certain number of iron and steel products. These prices are compiled from actual contracts which were made several months ago, and this accounts for the difference between these quotations and the base prices regularly quoted in our columns.

Compared with those prevailing one year ago, prices in February this year were lower, with the exception of beams and rails. Compared with those of the previous month, prices were lower, with the exception of foundry pig iron, rails, and black sheets.

	£	s	d	$
Foundry pig iron	4	2	9	20.00
Beams	9	1	9	43.90
Rails	8	17	9	43.00
Plates	10	4	4	49.45
Black sheets under ⅛-inch thick	12	8	3	60.05
Galvanized sheets	15	8	0	74.50
Tin plates	19	14	0	95.45

Luxemburg Output Less

Brussels, March 26.—(*European Staff Service*)—Production of pig iron in Luxemburg in February included 214,239 tons of basic bessemer, 5855 tons of foundry, and 20 tons of gray forge pig iron. Output of steel in February included 202,150 tons of basic bessemer, 2180 tons of open-hearth, and 723 tons of electric steel. The following table gives comparisons in metric tons:

Mon. ave.	Pig iron	Steel ingots and castings
1913	212,320	111,355
1925	196,940	173,855
1926	209,295	186,980
1927	226,115	205,850
1928		
Jan.	229,602	212,939
Feb.	220,114	205,053

Make Less Belgian Iron

Brussels, March 26.—(*European Staff Service*)—Production of pig iron in Belgium in February was slightly below that of January. February output of steel included 300,950 tons of steel ingots and 9460 tons of steel castings. The following table gives comparisons in metric tons:

Mon. ave	Coke	Act. Furn.	Pig iron	Steel ingots and castings	Finished steel
1913	294,000	....	207,055	205,550	154,920
1925	342,645	....	211,875	212,380	151,215
1926	413,000	....	283,270	281,160	231,810
1927	448,880	....	312,620	309,040	255,185
1928					
Jan.		55	314,580	315,650	277,870
Feb.	455,480	55	302,000	310,410	260,290

News of Societies

STRUCTURAL steel welding, automobile welding, steel rail welding and subjects pertaining to the qualification of welders, inspection and supervision are scheduled for discussion at the annual meeting of the American Welding society to be held at the Engineering Societies building, New York, April 25-27. The society has announced its revised program for this meeting as follows:

Wednesday, April 25

MORNING

Pressure vessel committee meeting.

AFTERNOON

Structural steel welding committee meeting.

EVENING

Nomenclature committee meeting.

Thursday, April 26

MORNING

Business meeting and election of officers.
"Welding Corrosion Resisting Steel Alloys," by W. B. Miller, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.
"Building Up Rail Ends by the Electric Arc Process," by H. E. McKee, Electric Rail Weld Service Corp.

AFTERNOON

"Preliminary Progress Report on Qualifications of Welders, Inspection and Supervision," by H. H. Moss and A. M. Candy.

EVENING

Annual dinner.

Friday, April 27

MORNING

Board of directors meeting.
"Welding the Ford Car," by M. L. Eckman, welding supervisor, Ford Motor Car Co., Detroit.

AFTERNOON

Annual meeting of American Bureau of Welding.

* * *

To Discuss Refractories

Discussion of a select list of specifications used by consumers at the present time for the purchase of refractories will be one of the important features of the annual meeting of the American Refractories institute at the Greenbrier, White Sulphur Springs, W. Va., May 8. An effort is being made to have a well-balanced attendance between the consuming and producing interests. It is believed that the discussion will be of considerable value to consumers in formulating more practical requirements and that manufacturers will benefit by obtaining viewpoints of the consumers.

The remainder of the day will be taken up by business transactions, committee reports and several papers. Among the papers will be one on "Screening of Fire Clays," and another on "The Cause of Bulging in Hand-Made Shapes." The latter paper has been prepared by the refractories fellowship at Mellon institute and is a continuation of an open forum on the subject at the December meeting.

* * *

Engineers To Meet in Pittsburgh

The spring meeting of the American Society of Mechanical Engineers which is to be held at the William Penn hotel, Pittsburgh, May 14-17, will be break a record for the number of sessions scheduled. At the same time, the number of papers has been reduced for the purpose of securing maximum value from the discussions. On three afternoons, interesting inspection trips have been arranged and it is expected that many will take advantage of these excursions. At the dinner to be served on Wednesday evening the Holley medal will be awarded to Elmer A. Sperry for his invention of the gyroscope.

Features of the Pittsburgh program are as follows:

Monday, May 14

MORNING

Council meeting.

AFTERNOON

Management

"Systems of Workman Payment in Production Factories," by H. N. Kraner.

Education and Training for Industries

"Training Minor Executives in a Rapidly Growing Organization," by A. J. Beatty.

EVENING

Informal entertainment.

Tuesday, May 15

MORNING

Seamless Tubing

"The Manufacture of Seamless Tubes," by R. C. Stiefel and George A. Pugh.

AFTERNOON

Inspection trip to plants of United States Steel Corp.

Wednesday, May 16

MORNING

Machine Shop Practice

"Some Common Delusions Concerning Depreciation," by E. F. DuBrul.
"Ball-Bearing Machine Tool Spindles," by Thomas Barish.

AFTERNOON

Inspection trip to Westinghouse Electric & Mfg. Co.

EVENING

Dinner.

Thursday, May 17

MORNING

Materials Handling and Management

"A Material Handling and Transport Organization," by C. A. Fike.

Alloys

"Mechanical Properties of Aluminum Casting Alloys at Elevated Temperatures," by R. L. Templin, C. Braglio and K. Marsh.
"A Study of Tin-Base Bearing Metals, Part I," by O. W. Ellis and G. B. Karelitz.

AFTERNOON

Inspection trip to American Window Glass Co., Jeannette, Pa.

Morse Chain Co., Trumansburg, N. Y., has increased its capital from 35,000 to 120,000 shares, no par value.

Convention Calendar

April 19-21—American Gear Manufacturers' association. Spring meeting at Hotel Seneca, Rochester, N. Y. T. W. Owen, 3608 Euclid avenue, Cleveland, is secretary.

April 23-24—American Society of Mechanical Engineers. First national meeting of materials handling division at Hotel Benjamin Franklin, Philadelphia. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

April 25-26—National Metal Trades association. Annual meeting at Hotel Astor, New York. J. E. Nyhan, Peoples Gas building, Chicago, is secretary.

April 25-27—National Foreign Trade Council. Fifteenth national foreign trade convention at Rice hotel, Houston, Tex. O. K. Davis, 1 Hanover Square, New York, is secretary.

April 25-27—American Welding society. Annual meeting at Engineering Societies building, New York. M. M. Kelly, 33 West Thirty-ninth street, New York, is secretary.

April 26-28—American Electrochemical society. Spring meeting at Hotel Stratfield, Bridgeport, Conn. Dr. Colin G. Fink, Columbia university, New York, is secretary.

May 3-4—National Hardware Association of the United States. Seventh annual meeting of metal branch at Copley-Plaza hotel, Boston. George A. Fernley, 505 Arch street, Philadelphia, is secretary.

May 3-4—Iron and Steel institute. Annual meeting at Institution of Civil Engineers, London. G. C. Lloyd, 28 Victoria street, London S. W. 1., is secretary.

May 7-8—Taylor society. Spring meeting at Detroit-Leland hotel, Detroit. H. S. Person, 29 West Thirty-ninth street, New York, is managing director.

May 8—American Refractories institute. Annual meeting at Greenbrier, White Sulphur Springs, W. Va. D. A. Texter, 2202 Oliver building, Pittsburgh, is secretary.

May 8-11—Chamber of Commerce of the United States. Sixteenth annual meeting at Chamber of Commerce building, Washington. D. A. Skinner, 1615 H street, Washington, is secretary.

May 14-18—American Foundrymen's association. Annual convention and exposition at Commercial Museum, Philadelphia. 140 South Dearborn street, Chicago, is secretary.

May 15-17—National Supply and Machinery Distributors association. Annual meeting at Hermitage hotel, Nashville, Tenn. George A. Fernley, 505 Arch street, Philadelphia, is secretary.

May 15-17—American Supply and Machinery Manufacturers association. Annual meeting at Hermitage hotel, Nashville, Tenn. F. D. Mitchell, 1819 Broadway, New York, is secretary.

May 15-17—Southern Supply and Machinery Dealers association. Annual meeting at Hermitage hotel, Nashville, Tenn. Alvin M. Smith, Smith-Courtney Co., Richmond, Va., is secretary.

May 22-24—American Steel and Heavy Hardware association. Nineteenth annual convention at Copley-Plaza hotel, Boston. B. R. Sackett, 503 Arch street, Philadelphia, is secretary.

May 25—American Iron and Steel institute. Spring meeting at Hotel Commodore, New York. E. A. S. Clarke, 75 West street, New York, is secretary.

May 28-31—National Association of Purchasing Agents. Thirteenth annual convention and exhibition at American Royal building, Kansas City, Mo. George A. Renard, 9 Park Place, New York, is secretary.

Obituaries

HARRY WHEELOCK KING, 65, president and son of the founder of the King Bridge Co., Cleveland, died in Kirtland Hills village, O., April 15. Mr. King had been a director of the Cleveland Trust Co., an associate member of the American Society of Civil Engineers and a fellow of the Cleveland Museum of Art. He was associated with the Osborn Building Co. and the Stratford Building Co., both of Cleveland.

* * *

Edward Hazlett, 63, iron and steel broker, Wheeling, W. Va., died in New York, April 16.

* * *

Bruce P. Owens, 45, vice president of O'Malley-Beare Valve Co., Chicago, died recently at Wilmette, Ill.

* * *

G. W. Bergen, 45, construction engineer for the Carnegie Steel Co., Pittsburgh, died in that city recently.

* * *

John T. Callaghan, for 30 years a government steel inspector on hull work for the navy in the Chester, Pa., district, died April 1.

* * *

John Sommer, 62, vice president, director and one of the founders of the Keystone Steel & Wire Co., Peoria, Ill., and president of the Mid-States Steel & Wire Co., Crawfordsville, Ind., died April 7.

* * *

George H. Snell, 64, former manufacturer and inventor of pipe couplings, died at Attleboro, Mass., recently. He was largely instrumental in developing several New England water systems.

* * *

Robert J. Davis, 59, manager of operations of the American Brown Boveri Co.'s plant at Camden, N. J., died suddenly in Philadelphia April 9. Mr. Davis was a member of the Union League and Engineers' clubs of Philadelphia.

* * *

A. W. Grant Jr., for the past 12 years with the Koppers Construction Co., Pittsburgh, died April 5. Mr. Grant had been associated with the Baldwin Locomotive Works and the United Gas Improvement Co. prior to his Koppers connection.

* * *

John Lally, 68, president, Lally Column Co., Greenpoint, Brooklyn, N. Y., died April 12 at Dublin, Ireland. Mr. Lally came to the United States from Ireland 45 years ago. He patented the Lally column 20 years ago. The company has plants at Brooklyn, Cambridge, Mass., and Chicago.

* * *

William W. Sharp, 39, Akron district sales manager for Pierce, Butler & Pierce Mfg. Corp., New York, died April 9 in Cleveland. Mr. Sharp had been president and general manager of the Mill & Mine Supply Co. and the Akron Warehouse Co. until they became a part of Pierce, Butler & Pierce company in 1926. At that time he became district manager.

* * *

A. L. Broomall, 44, engineer of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., died April 10 at Wilkinsburg, Pa. Mr. Broomall became associated with the Westinghouse company following his graduation from Lehigh university in 1906. At the time of his death he was manager of the renewal parts engineering department.

* * *

Robert C. Garrison, 52, superintendent of the Salem, O., works of the American Steel & Wire Co., Cleveland, died at Salem April 11. Mr. Garrison has been superintendent of the plant for seven years. For 22 years prior to that he had been with the Steel & Wire company in Cleveland. He began in the Newburg mills and rose to be assistant superintendent of one of the Cleveland mills.

Bar Questionnaire Out

Washington, April 17.—The simplified practice division, department of commerce, has mailed questionnaires to ascertain opinion on the simplification program for steel reinforcing bars. This procedure precedes reaffirmation or revision of the program.

For 24-foot Channels

Washington, April 17.—Army engineers are expected to recommend to congress shortly that channels and important harbors on the Great Lakes be dredged to a depth of 24 feet, or 3 feet over the present average. The cost would be $55,000,000, spread over five years. Advocates of the St. Lawrence waterway propose a Great Lakes channel depth of 27 feet.

Mirrors of Motordom

(*Concluded from Page* 1041)

Soto, now being introduced by "blind" ads is variously credited to General Motors and Chrysler.

* * *

SELLING iron and steel to Canadian consumers involves as much detail as a shipment to Asia. In shipping scrap to Canada, which is being done increasingly by Detroit brokers, an export manifest must accompany the car and in addition customs invoices must be sent the purchaser to facilitate payment of the Canadian sales tax. Canadian consumers usually buy f.o.b. Detroit. Recently one Canadian ferroalloy maker bought 15,000 tons of turnings.

* * *

THOSE who have envied the calm, peaceful life of sheet mill representatives at Detroit need only emulate their Christian virtue of giving rather than receiving. The formula is advanced by the representatives themselves, who still experience a glow from having donated to buyers of automotive sheets $3 per ton for the second quarter, and perhaps for the entire year.

There is no question of the $3 being a gift. Many of the larger buyers were persuaded that the mills deserved a 4.15c, Pittsburgh, price, and had placed orders at that figure. Even the buyer erroneously credited with breaking the market had bought at 4.15c, later cancelling. This user's requirements are so severe few mills can meet them. Had the mills had a shade better waiting qualities than this buyer's purchasing agent the 4.15c price undoubtedly would have held. Considering all outlets for autobody sheets, pressure for a concession was mild.

If the mills were actually to net 4.00c on this grade the situation would not be so bad. On no other steel product is inspection so severe. Even though users take seconds up to 15 per cent of their contract total at a 10 per cent reduction in price, additional rejects must be marketed elsewhere. The disappointment is the more intense because most mills were making a stand on 4.15c. Among many buyers there was recognition that the steel industry last year netted only 5.24 per cent, against 28.05 for representative automobile makers.

"If we had whiskers we could not be told from Santa Claus," laments one seller.

Machinery

Week's Business Shows Slight Improvement, but Large Orders Fail to Appear—Activity Is Sustained By General Industrial Purchases

MACHINE tool and shop equipment orders continue at a satisfactory rate with a little improvement over last week. Activity during the first part of this year has been a little better than during the corresponding period of 1927, although there has been an absence of large orders. A great many more customers have been involved in this year's transactions than was the case last year. Restricted buying by the automobile industry and the railroads is particularly responsible for the lack of large orders. A number of inquiries involving from five or more items each are pending in New York. Small orders predominate in the Chicago area, with the buying scattered. Railroad business is much lighter there and inquiry from farm equipment manufacturers has slackened.

New York, April 17.—Trading in machine tools is moderately good, with an improvement over a week ago. Not only is there a better micellaneous volume of demand but also more sizable lists. Sellers generally regard the business so far this year as an improvement over the corresponding period of last year. There has not been the placing of heavy machines that there was a year ago, reflecting chiefly lesser interest on the part of the railways, but there has been an increase in the number of orders for light precision equipment which has more than offset this other shrinkage. This is due in a large measure to automotive buying. This in general has not only been true with regard to domestic business, but also export bookings. Leading sellers assert that not only have shipments been better but also actual orders and that most of the equipment has been for Europe and for the automotive industries in particular. It is stated that relatively little business has been booked so far this year for South America, where railroads are the principal buyers. Among larger inquiries are approximately 30 light motor-driven machine tools for Dairymen's league, New York, and 12 machines for Dwight P. Robinson & Co., for shipment abroad. This latter list includes two lathes, a shaper, a grinder, drill press, hack saw, punch and shear and a pipe threading machine. Another sizable list involving close to 20 tools, several of heavy type, for the Sparrows Point, Md., plant of the Bethlehem Steel Corp. Niles Tool Works has been awarded a number of heavy machines by the Philadelphia Rapid Transit Co. The Standard Oil Co. of New Jersey is inquiring for 10 machine tools for Argentina. Prospective buyers include the Pennsylvania railroad, which is understood to be compiling a list for early issuance, and Todd Shipyards Corp., Brooklyn, which is building dry docks for the handling of the larger ocean liners. It is doubtful, however, if this latter company will be in the market for several months.

Worcester, Mass., April 17.—Sustained buying by several automobile interests is a feature of the machine tool business in central and western New England. Additional lists have been placed by a Detroit interest, which includes additional production lathes, radial drills and presses. One company has ordered eight die-sinkers. Grinding machinery is in good demand with a fair volume of new business placed. There are, however, dull spots among manufacturers of the same type of units. Textile machinery is not yet up to satisfactory volume.

Pittsburgh, April 17.—Machine tool and equipment lines are slightly busier. Pittsburgh Plate Glass Co. has awarded six cranes. One interest has given the verbal order for an open-hearth charger. A coal field interest bought four machines, including a motor-driven drill and saw, a shaper and a grinder. One dealer here sold three vertical shapers late last week. Various other manufacturers in the district have closed upon one or two machine tool items each. A subsidiary interest of the General Electric Co., which is to start up a shop in this territory some time this summer, is in the market for nine items, including four lathes, a sliding head drill, a grinder, saw, milling machine and power press. Koppers Co. continues to ask for various items, and the Pennsylvania railroad wants a centerless grinder. Westinghouse Electric & Mfg. Co. has added several tools to its list and will take action this week on needed items. Westinghouse Airbrake Co. continues to negotiate on two grinders.

Cleveland, April 17.—Some slight improvement is noted in machinery sales and demand in this territory. Current business, for the most part is made up of small orders and equipment of a miscellaneous nature. Inquiries are light, but inasmuch as most sales are of a spot nature, these requests are not a true index of activity. Buying of equipment by the automotive industry in Detroit, Toledo and Cleveland is fairly brisk with many manufacturers participating. Ohio Tool Co., Cleveland, has purchased a number of machine tools for a plant addition in which it will manufacture portable electric washing machines.

Chicago, April 17.—Inquiries for machine tools have slumped off from the March rate, and sales likewise are in reduced volume. Dealers are waiting inquiries from the majority of the western railroads, whose delay in releasing 1928 business has depressed the market recently. Santa Fe has bought a few items against the list it issued a month ago, among the purchases being welding equipment. The Burlington has asked bids on a 6-foot radial drill and some grinding equipment. H. D. Conkey & Co., Mendota, Ill., is in the market for a 50-ton vertical hydraulic press complete with pump, valves and all necessary fittings. Scattered industrial buying is reported in the Chicago district, but these sales are fewer in number than at the close of March. Among purchases in the local trade were a number of sheet metal shop tools, several drills, presses and light shop equipment, in addition to grinding machines. One of the farm implement works again is active on inquiries that have been pending for some time. Prices in the main are steady. Inquiry for used tools has declined recently.

Cincinnati, April 17.—Local machine tool manufacturers are running night shifts in some cases, indicating heavier orders and renewal of specifications held up earlier. Some demand has come from abroad but that business has not opened up as expected. Labor is being employed more and more in these manufactories, giving reason to believe that better than normal business may be expected in the coming months.

CRANE ORDERS PLACED

Nine 50-ton locomotive cranes for Amtorg Trading Corp., New York; reported placed with Industrial Works. These are in addition to six shovel cranes placed some time ago, of which four went to Marion Steam Shovel Co, and two to Link-Belt Co.

Six cranes for Pittsburgh Plate Glass Co. Ford City, Pa., including four 20-ton to Cleveland Crane & Engineering Co. and two 5-ton to Alliance Machine Co.

Among single awards were: 40-ton 4-motor floor-controlled crane for Standard Traprock Co., New York, to unnamed builder; 10-ton handpower overhead crane for Honolulu Iron Works, New York, to Maris Bros.; 5-ton 2-motor crane for City of Bridgeport, Conn., through Silverstone & Irwin of that city to Box Crane & Hoist Corp,; 15-ton electric crane for E. I. du Pont de Nemours & Co., Wilmington, Del., to Niles Crane Corp.

CRANE ORDERS PENDING

Twenty-three ¼-ton electric hoists and one 2-ton electric crane for Zurn Mfg. Co., Erie, Pa.; specifications at least temporarily withdrawn. Wilbur Watson, New York, was engineer in charge.

Two 15-ton cranes for Carnegie Steel Co., Duquesne, Pa.; pending.

4-ton electric traveling crane for assembly wharf for department of public works, Port Alberni, B. C. Bids will be received S. E. O'Brien, secretary, until May 8. Plans can be secured at office of district engineer, Post office, Victoria, B. C.; and at post offices at Vancouver and Port Alberni, B. C.

Light crane for Badger Meter Co., Milwaukee; inquiry issued.

CONSTRUCTION *and* ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

PLANTSVILLE, CONN.—Atwater Mfg. Co., manufacturer of drop forgings, has awarded the contract for a 1-story plant addition to H. Wales Lines Co., Meriden, Conn.

WASHINGTON—Contracts have been awarded by William P. McCracken, assistant secretary of commerce for aeronautics, for 12 radio control stations and six radio beacons to General Electric Co., Schenectady, N. Y.; 12 marker beacons to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

BOSTON—Silverhill Mfg. Co. Inc., 80 Federal street, has been incorporated with $100,000 capital to manufacture and deal in metals and metal products, by Herbert K. Reynolds.

BOSTON—Arcade Smelting & Refining Corp. has been incorporated with 1000 shares no par value to manufacture, smelt and refine metals, by Robert Cutler, Heath street, Brookline, Mass.

BOSTON—Massachusetts Steel Products Inc. has been incorporated with 500 shares no par value stock to manufacture metal specialties and devices, by Henry P. Roberts, 266 Seaver street, Roxbury, Mass.

LOWELL, MASS.—Ziskind Iron & Metal Co., 88 Tanner street, has been incorporated with $50,000 capital to manufacture and deal in machinery of all kinds, by Abraham Ziskind, 75 Gates street, Lowell.

MEDFORD, MASS.—Fellows Brass & Iron Foundry, Waterville, Me., plans to move to this city in June. L. C. Smith is superintendent.

SPRINGFIELD, MASS.—Guarantee Roofing & Plumbing Co. has been incorporated with 400 shares no par value to do tinsmithing and metalworking, by Julius Radding, 68 Bryant street.

AUDUBON, N. J.—Audubon Wire Cloth Co. has awarded the general contract for a 2-story plant addition, 55 x 100 feet, to J. D. Lawrence, Westville, N. J. (Noted March 1.)

BLOOMFIELD, N. J.—Consolidated Safety Pin Co. has awarded the contract for structural steel for a plant addition to McClintic-Marshall Co.

CAMDEN, N. J.—Electric Coil Winding Co., 2101 Federal street, has awarded the contract for a 1-story plant addition, 50 x 60 feet, to Charles B. Coe, 120 West Irving avenue, Merchantville, N. J.

NEWARK, N. J.—Arcweld Iron Works has been incorporated with 500 shares no par value stock by Michael Breitkopf, Newark, attorney.

RED BANK, N. J.—Modern Heating & Engineering Corp. has been incorporated with $125,000 capital to manufacture and deal in oil burning equipment, by Wilson & Smock, Red Bank, attorneys.

UNION CITY, N. J.—Foscale Iron Works has been incorporated with $100,000 capital by Samuel Harber, Union City, attorney.

BROOKLYN, N. Y.—Bernhard Bros. have been incorporated with $30,000 capital to manufacture and deal in iron and steel supplies by Cohn & Falk, 170 Broadway, attorneys.

BROOKLYN, N. Y.—Concrete reinforcing bar contract for a new drydock for Todd Shipyards Corp., Erie Basin, went to New York Machine Exchange and Bethlehem Steel Co., each company taking half the tonnage.

NEW YORK—Florentine Bronze Corp. has been incorporated with $25,000 capital by S. G. Carten, 2 Lafayette street, attorney.

NEW YORK—U. S. Boiler Corp. has been incorporated with $20,000 capital to manufacture and deal in boilers, by E. I. Herbst, 220 Broadway, attorney.

NEW YORK—K. & K. Electric Co. has been incorporated with 200 shares no par value stock to manufacture and deal in electrical appliances, by I. Kauffman, 1 Lispenard street, attorney.

NEW YORK—Superior Lighting Co. has been incorporated with $20,000 capital to manufacture cigarette lighters by S. J. Robbins, 51 Chambers street.

NEW YORK—Gynex Corp. has been incorporated with $10,000 capital to manufacture and deal in surgical instruments by H. T. Lindauer, 1841 Broadway, attorney.

NEW YORK—Best Die Casting & Stamping Corp., 19 Thompson street, plans to expand its plant and has acquired property at 33 Grand street.

NEW YORK—S. Robert Schwartz & Bro., 546 Broadway, manufacturer of lighting equipment and electrical supplies, will move to its new location at 160 Varick street.

NEW YORK—Wedgittie Co. has been incorporated with 1000 shares no par value stock to manufacture engines by Curtis, Mallet-Prevost, Colt & Mosle, 30 Broad street, attorneys.

NEW YORK—Internal Water Heater Co. has been incorporated with $25,000 in preferred shares, 100 shares no par value stock to manufacture and deal in water heaters, by L. A. Greenbaum, 70 West Fortieth street, attorney.

NEW YORK—Clifford & Co. has been incorporated with 200 shares no par value stock to manufacture and deal in aluminum and aluminum products, by B. Austin, 302 Broadway, attorney.

ROCKVILLE CENTER, N. Y.—South Shore Electrol has been incorporated with $15,000 in preferred shares and 600 shares no par value

Where Machinery Exports Went in February

	Lathes			Drills				Planers and		
	Engine	Turret	Other	Vertical	Radial	Other	Gear cutters	shapers	Milling knee-column	Machines other
Russia	16	2	10	....	....	....	1	....	1	7
France	2	....	....	....	3	4	....	7	3	1
Germany	5	2	....	3	1	1	7	14	1	3
Italy	....	....	11	1	....	....	1	7	....	2
Netherlands	....	3	....	....	1	1	1	....	1	....
Spain	1	....	1	....	....	1	....	....	1	....
Sweden	....	4	....	....	....	....	1	....	....	....
United Kingdom	7	4	7	2	1	4	9	2	3	4
Canada	20	9	13	9	7	19	2	2	1	7
Mexico	....	....	1	....	....	9	....	....	2	....
Cuba	1	....	....	....	....	....	....	....	....	....
Argentina	....	....	1	....	....	....	....	....	2	....
Colombia	1	....	....	....	....	....	....	....	....	....
Chile	....	....	....	2	....	....	....	....	....	....
Brazil	1	1	....	....	....	....	....	....	2	2
Japan, Chosen	....	1	....	....	....	13	....	2	....	....
Philippine Islands	1	....	3	....	....	....	....	1	....	....
Australia	1	....	1	1	....	1	....	....	....	....
British South Africa	....	....	....	....	....	....	....	....	....	....
Venezuela	1	....	....	....	....	....	....	....	....	....
Other countries	11	4	5	1	....	3	2	1	7	25
1928										
February	68	30	53	19	13	56	24	36	24	51
January	66	26	57	42	18	42	31	40	30	81
Total, 1927	716	280	444	376	105	862	379	42	270	491

stock to manufacture and deal in pumps, by Gunn & Gunn, Port Washington, N. Y., attorneys.

SYRACUSE, N. Y.—Mid-State Tools Corp. has been incorporated with 500 shares no par value stock to manufacture and deal in tools, by R. B. Smith, Syracuse, attorney.

SYRACUSE, N. Y.—Smith Home Appliances, H. H. Elmer, president, will start work immediately on a new plant for the manufacture of the company's new model electric ironers. The plant will be 2 stories, 75 x 200 feet, and is expected to be completed late in the summer.

SYRACUSE, N. Y.—U. S. Hoffman Machinery Corp. will start work shortly on plant expansion to increase the company's output of garment pressing machinery. Two units will be constructed, one a foundry and the other a plant, both 1-story, with the exception of part of the plant which will be 2 stories to allow for office space.

ULSTER COUNTY, N. Y.—Phoenicia Metal & Stamping Corp. has been incorporated with $100,000 capital by J. W. Eckert, Kingston, attorney.

ECONOMY, PA.—Structural steel for a crane runway roof for the Central Tube Co. has been awarded to Jones & Laughlin Steel Corp.

ERIE, PA.—Bucyrus-Erie Co. will start work immediately on a plant addition. The general contract has been awarded to Henry Shenk Co.

DAVISVILLE, PA.—Clarence E. Wunder, architect, 1520 Locust street, Philadelphia, has just opened bids for the erection of a mill building here.

MT. CARMEL, PA.—Construction on a plant for the Ornamental Iron Works of Mt. Carmel will begin shortly. R. J. Best, L. H. Brendlinger and H. C. Ebinger are interested in the organization, which will be incorporated soon. The first unit will be 50 x 75 feet. Machinery, tools and equipment are being ordered now.

PHILADELPHIA—Pyramid Motor Freight Corp., 1128 East Palmer street, has awarded a contract for a small machine shop to John I. Dillon, 1804 North Front street.

PHILADELPHIA—A contract for a boiler house has been awarded by D. Goldenberg, 2011 East Arizona street, to the Haverstick Borthwick Co., 1505 Race street.

PHILADELPHIA—Contractors here are figuring on the erection of a 1-story, bus repair shop for the Philadelphia Rapid Transit Co. at Third street and Hunting Park avenue. The proposed structure will be 282 x 406 feet and will contain a machine shop and overhauling shop.

PITTSBURGH—Lawson Mfg. Co., Lexington avenue and Thomas boulevard, manufacturer of heaters and heating equipment, has awarded the contract for a 1-story plant addition, 50 x 273 feet, to Donald Ranolla & Son, Cedarville street. (Noted March 29.)

PAWTUCKET, R. I.—Blackstone Valley Gas & Electric Co. plans extensions and equipment for its steam generating department, to include a list of electrically controlled units for feed and distribution.

CHICAGO—Chicago Pump Co., 2336 Wolfram street, M. I. Weil, president, soon will take bids on general contract for a 1-story plant addition.

CHICAGO—Continental Can Co., 100 East Forty-second street, New York, T. G. Cranwell, president, contemplates building a plant in the vicinity of Thirty-fifth street and Rockwell.

CHICAGO—E. M. Laird Airplane Co., 4500 West Eighty-third street, is inquiring for machinery and equipment for its proposed machine shop.

CHICAGO—Capitol Heater Corp., 2500 Lawrence avenue, has been incorporated with $1000 capital to manufacture and deal in hot water heaters and accessories by Herman, Eva and Max Greenberg.

CHICAGO—American Family Scale Co. Inc., 764 Mather street, has been incorporated with $50,000 capital to manufacture and deal in scales and weighing machines, by Moses and Meta Hirsch.

CHICAGO—Brook Electrical Supply Co., 31 South Clark street, suite 31, has been incorporated with $20,000 capital to manufacture and deal in radios, supplies, etc., by John Brook, Louis Wittenberg and Ben Steinfeld.

CHICAGO—National Welding Products Corp., 4400 Addison street, has been incorporated with $30,000 capital to manufacture and deal in welding wires, equipment, supplies, etc., by Milton D. Rutherford, A. L. Moyel and L. D. Rutherford.

DANVILLE, ILL.—Marlatt Battery & Mfg. Co., 1112 Industrial street, has been incorporated with $40,000 capital to manufacture and deal in electrical appliances, batteries, etc., by J. O. Marlatt, Hugh J. Marlatt and C. E. Marlatt.

ELMHURST, ILL.—General Heating & Ventilating Co., 125 York street, has been incorporated with $5000 capital to do a general sheet metal business, install hot water, steam and vapor heating plants, etc., by John Thompson, Philip Gartner and Josephine Bahaell.

MASCOUTAH, ILL.—Mascoutah Aluminum Co. has been incorporated with $10,000 capital to manufacture and deal in household goods and metal products, by Philip H. Postel, Allen H. Postel and H. F. Lill.

URBANA, ILL.—University of Illinois soon will take bids on the general contract for building a material testing laboratory.

FT. WAYNE, IND.—Truck Engineering Co., East Pontiac street, has awarded the contract for a 1-story plant, 60 x 100 feet. (Noted Nov. 24.)

DETROIT—Chevrolet Motor Co. contemplates establishing an assembly plant in Kansas City, Mo., on a 30-acre site at Thirty-seventh street and Rayton road.

DETROIT—Arcadia Pattern & Mfg. Co., 1291 Wabash avenue, has been incorporated with $10,000 capital to manufacture and deal in wood and metal patterns.

DETROIT—Bohn Aluminum & Brass Corp., 2512 East Grand boulevard, C. B. Bohn, president, has awarded the contract for a 1-story foundry addition to Krieghoff Co., French road.

DETROIT—Commonwealth Brass Co., 6781 Commonwealth avenue, P. D. Dwight, president, has awarded the general contract for a 2-story plant addition to Grant Powers, 4847 Whitfield avenue. (Noted April 5.)

BRYAN, O.—Bryan Screw Machine Products Co. will build an addition to the plant of the Service Station Equipment Co., which it will occupy. The building will house both companies.

CLEVELAND—Dependable Sheet Metal Co., 3803 Clark avenue, has started manufacturing sheet metal products, dies, stampings, etc.

CLEVELAND—White Motor Co., 842 East Seventy-ninth street, is inquiring for machine shop equipment for the service department of the proposed 1-story sales and service station 190 x 200 feet, to be built at Detroit.

CLEVELAND—Scott & Fetzer Co., J. H. Scott president, 11401 Locust avenue, manufacturer of vacuum cleaners, has awarded the contract for a 2-story plant addition, 55 x 60 feet, to Webber Co., 1609 West Twenty-fifth street, Cleveland. (Noted April 5.)

GALION, O.—American Steel Abrasives Co. is adding a 2-story wing, 40 x 80 feet, to its plant. The addition will nearly double the present capacity of the plant.

TOLEDO, O.—Standard Electric Stove Co., 1720 North Twelfth street, C. A. Pierson, president, plans to build a new plant.

NEWARK, O.—Wolrath Mfg. Co., O. M. Walrath president, manufacturer of automobile parts and accessories, is inquiring for complete equipment, including lathe, grinding machine, automatic drill, etc., for its new shop.

BERLIN, WIS.—Kramp Construction Co., Berlin, is successful bidder for erecting a new storeroom, garage, workshop and service building, 51 x 54 feet, 2-story, for the local branch of the Wisconsin Power & Light Co., Madison, Wis. H. R. Smith is district manager at Berlin.

KENOSHA, WIS.—Kenosha Brick & Tile Co. is contemplating new dry kilns, kiln sheds, conveyors and other equipment. Silvert Hollesen, R. R. 3, Kenosha, is president.

MILWAUKEE—Delta Mfg. Co., 858 Third street, will build a new plant, 40 x 100 feet, at Holton street and Vienna avenue.

MILWAUKEE—Milwaukee Corrugating Co., Thirty-sixth avenue and Burnham street, has started work on a plant expansion.

MILWAUKEE—A site for a plant to manufacture stone sand blast machinery is being sought here by I. Ruemelin, president of the Ruemelin Mfg. Co., Minneapolis.

MILWAUKEE—Milwaukee board of industrial education has awarded the contract to Fred H. Dorner, 548 Milwaukee street, Milwaukee, for furnishing a 400 kilowatt steam turbine generator to the Central Continuation school.

MILWAUKEE—Badger Meter Mfg. Co., 841 Thirtieth street, is taking bids for a plant addition 60 x 120 feet, to serve as a foundry addition and carpenter shop. A light crane will be among the needed equipment.

RACINE, WIS.—Waisman Iron & Steel Co. has been incorporated by Morris Waisman and associates to do a brokerage business in addition to supplying manufacturing institutions and foundries with metal. A location for office and yard will be selected at once.

RACINE, WIS.—A charter has been granted the B. & B. Mfg. Co., with $30,000 capital, to manufacture jigs, dies, tools, etc. A shop has been opened at DeKoven avenue and the Chicago & North Western tracks. Incorporators are Clem S. Bonin, Ernest C. Bruce and Jerome J. Foley, attorney.

West Central

WICHITA, KANS.—Baldwin Harvester Co., 432 South Wichita street, manufacturer of agricultural implements and equipment, plans to build a 1-story addition, 60 x 100 feet.

MINNEAPOLIS—O. B. McClintock Co., O. B. McClintock president, manufacturer of electrical burglar alarms, vault ventilators, electric chime clocks, etc., plans plant expansion to provide for the manufacture of locomotive cleaners and large electric thermometers, new inventions.

KANSAS CITY, MO.—Playground Equipment Corp. has been incorporated by H. A. Buffton, 6125 Mission street, to manufacture and deal in playground appliances and equipment.

ST. LOUIS—Atlas Tool & Mfg. Co., G. A. Delf, president, contemplates building a 1-story plant.

ST. LOUIS—Royer Mfg. Co. has been incorporated with $25,000 capital to manufacture liquid measuring devices, etc., by Rufus W. Royer, 5010 Maple street.

Southern States

COVINGTON, KY.—Star Foundry Co., 219 Main steet, maker of gray iron castings, plans to build a 1-story addition, 60 x 60 feet.

NEW ORLEANS—Radioil Burners Inc. has been incorporated by Joseph L. Giacomine, 823 Chartress street.

GASTONIA, N. C.—Cocker Machine & Foundry Co., 207 South Chestnut street, builder of cotton mill machinery, plans to build two plant additions, 1-story, 60 x 100 feet and 40 x 60 feet.

DUCKTOWN, TENN.—Carpenter and machine shops of the Mary mine, operated by the Ducktown Copper & Iron Co., were damaged in recent fire.

JOHNSON CITY, TENN.—Quinn Mfg. Co. plans to add a metalplating department to its plant.

CORPUS CHRISTI, TEX.—Luckett Foundry & Machine Co., H. L. Luckett manager, is inquiring for machinery and equipment for its recently acquired plant. (Noted April 5.)

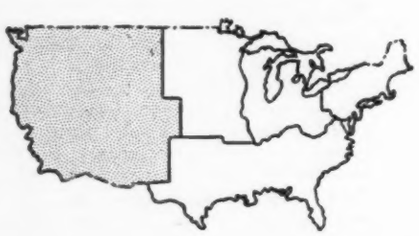
HOUSTON, TEX.—Electrical Equipment & Construction Co. has been incorporated by Harry B. Darcy, 2613 Beauchamp street.

SAN ANTONIO, TEX.—San Antonio Casket Co., L. O. Elliff general manager, has established a plant at 1211 East Houston street. Machinery and equipment has been purchased.

MARTINSVILLE, VA.—Virginia Mirror Co. has started work on a plant addition for the manufacture of mirrors, mirror frames, etc.

RICHMOND, VA.—Graham Concrete Agitator Co. Inc. has been incorporated with $10,000 capital by O. T. Graham, 4 North Colonial avenue.

ROANOKE, VA.—Board of education contemplates installation of manual training equipment in a 3-story junior high school on which construction will be started soon.



Western States

LOS ANGELES—Emsco Press Forge Co., 5701 South Boyle avenue, Vernon, has awarded the contract for a 1-story plant to Union Works of this city.

LOS ANGELES—A. G. Mfg. Co., Seattle, has begun production in its new plant at East Forty-ninth street and Loma Vista avenue, established for the manufacture of electrical switchboards and panels.

SAN DIEGO, CALIF.—Ingle Mfg. Co. has been awarded the contract to outfit eight navy cruisers with 50 oil-burning ranges. Other navy contracts are expected.

SAN DIEGO, CALIF.—Ryan Aeronautical Corp., 412 Union building, will manufacture special type of air-cooled motor, formerly made only in Germany. A new plant will be erected for manufacturing this product.

SANTA MONICA, CALIF.—Douglas Co., builder of airplanes, has awarded the contract for a 2-story airplane manufacturing plant at 2918 Central avenue, to cover an area 240 x 375 feet.

SANTA MONICA, CALIF.—Douglas Co., care of L. B. Norman, 1325 Georgina avenue, contractor, has awarded the contract for a 1 and 2-story plant, 240 x 375 feet for the manufacture of airplanes, at Ocean Park boulevard.

HILLSBORO, OREG.—Board of education contemplates installing manual training equipment in new high school. Marion Stokes, Chamber of Commerce building, is architect.

PORTLAND, OREG.—Peninsula Iron Works has been incorporated with $1000 capital by D. S. Knowles and associates, care of Perkins & Bailey, Board of Trade building.

PORTLAND, OREG.—Hippely Machine Works Inc. has been incorporated with $10,000 capital by Louis Ehlinger, care of James H. McMenamin, Selling building.

PORTLAND, OREG.—Crawford & Doherty Foundry Co., 934 East Seventeenth street, iron castings, has awarded the contract for a 1-story foundry to Parker & Banfield, East Seventeenth street. (Noted Jan. 19.)

OLYMPIA, WASH.—York Mfg. Co., Seattle, has been awarded contract to furnish refrigerating machinery, electric motors and other equipment for the Port of Olympia cold storage plant.

SEATTLE—J. A. Fortier Co. has been incorporated with $100,000 capital to engage in the steel jobbing business.

SEATTLE—Olympic Steel Co. has increased its capital stock from $60,000 to $90,000 part possibly to be used for expansion.

Canada

PRINCE ALBERT, B. C.—City council plans addition to power plant here. Proposed undertaking will include the installation of a new turbine, mechanical overhead feeders, two new boilers, etc.

VANCOUVER, B. C.—Cork Province Mines Ltd., has awarded contract to Bartholomew, Montgomery & Co., hydro-electric engineers, Vancouver, for installation of a hydro-electric plant to take care of its mine and mill requirements. Installation work will include the supply and erection of waterwheel, governor, exciter and automatic switchboard equipment. The contract also includes the erection and equipment of a substation adjoining the mill.

WINNIPEG, MAN.—Winnipeg Electric Co., will erect a terminal station here. The plant will take care of the production of the Seven Sisters falls power development. The new terminal will receive and distribute the additional load and also effect a connection with the hydro transmission system. It will have a capacity of 50,000 horsepower, with provision for doubling that capacity when need arises.

COBALT, ONT.—The plant of the McKinley-Darragh mines was burned April 8, damaging the mill, the oil house and machine shop. It is not expected that the entire plant will be rebuilt immediately, although some reconstruction will be undertaken.

GALT, ONT.—The plant of the Canadian Edge Tool Co. was damaged by fire following an oil explosion.

LONDON, ONT.—Empire Brass Mfg. Co. Ltd.

Dundas street east, has awarded contract to the McEachren Construction Co., 244 Ridout street, for a plant addition. Architects are Watt & Blackwell, Bank of Toronto Chambers, London. Building to be 2-story and basement, 40 x 60 feet, steel and brick construction.

MERRICKVILLE, ONT.—The plant of the Canada Brass Co. was damaged by fire recently. The company has made no announcement regarding construction work.

OAKVILLE, ONT.—T. Strachan, president of the General Metal Devices Ltd., is calling for bids for a plant to manufacture electrical fixtures, etc. The building, to be erected on Kerr street, will be 60 x 300 feet, fireproof concrete block construction.

SUDBURY, ONT.—International Nickel Co., in connection with its extensive building development program, has awarded contract to Frase Brace & Co. for the construction of its entire surface plant, on which work will be started immediately.

TORONTO, ONT.—Burke Electric & X-Ray Co. Ltd. has been incorporated to manufacture electrical apparatus and machinery with $100,000 capital by Arnold C. Burke, Margaret Burke and Frank Cunningham.

TORONTO, ONT.—De Haviland Aircraft of Canada Ltd. has been incorporated to manufacture and deal in airships, airplanes, flying machines and aeronautical apparatus, with $250,000 capital stock by Robert Wherry, William Zimmerman and Robert K. Logan.

WATERLOO, ONT.—James Playfair and E. J. Pallet, purchasers of the Waterloo Mfg. Co., manufacturer of agricultural implements, contemplate considerable expansion in production.

WINDSOR, ONT.—Chrysler Corp. of Canada Ltd., Box 249, has started work on an addition to its plant here for the purpose of doubling its present output. The building will be 2-story, 100 x 400 feet, and is expected to be completed by May 15.

WINDSOR, ONT.—John W. Ladd Co. of Canada Ltd. has been incorporated to manufacture and deal in engines, motors, machinery, tools, etc., with $60,000 capital and 1000 shares no par value stock by Ralph F. Sheppard, Maxfield Sheppard and Madeline L. McKee.

MELOCHEVILLE, QUE.—Frank P. Jones is interested in a company that proposes to build a power plant here.

MONTREAL, QUE.—Bids are being received by T. T. Irving, regional club engineer, Canadian National railways, new union station, Toronto, Ont., for substructure in connection with addition to locomotive shops, etc., here.

MONTREAL, QUE.—Globe Metal & Smelting Corp. Ltd. has been incorporated to manufacture and refine metals and to carry on the business of a founder, with $49,000 capital by Isaac Kert, Abraham W. Muhlstock and Florence Varney.

SHAWINIGAN FALLS, QUE.—Shawinigan Engineering Co. is contemplating the construction of a power plant here.

Varieties of Hacksaw Blades Cut Down

Washington, April 17.—A simplified practice recommendation for standard tungsten and carbon hacksaw blades, adopted at a meeting conducted here April 13 by the division of simplified practice, department of commerce, will become effective July 1, 1928, for new production and Jan. 1, 1929, for clearing current stocks. The division will shortly circularize the industry for acceptances to the recommendation, which reduces varieties 75 per cent. The following standing committee was named:

William P. Jeffrey, managing director, Hack Saw Manufacturing association, to represent manufacturers; Lawrence G. Puchta, National Supply and Machinery Distributors' association, to represent distributors; F. S. Walters, American Society of Mechanical Engineers, also Westinghouse Electric & Mfg. Co.; F. C. Nichols, navy department, and a representative to be appointed by the American Railway association to represent organized users.

Coated Abrasive Sizes Are Simplified

Washington, April 17.—A simplified practice recommendation for coated abrasive products was adopted at the general conference at the department of commerce under auspices of the division of simplified practice.

This recommendation provides that certain sizes and varieties of abrasive paper and cloth will be manufactured as stock items after Sept. 1, 1928, which will, according to estimates, care for at least 95 per cent of the trade.

The conference set the first revision date for the recommendation for July 1, 1929, and allowed until Jan. 2, 1929, to clear the present manufactured stock.

New Trade Publications

ELEVATORS—Warner Elevator Mfg. Co., Cincinnati, has issued a folder calling attention to the use of its elevators in mooring towers for dirigibles.

STEEL CASTINGS—A current bulletin by the Nugent Steel Castings Co., Chicago, gives two instances in which redesign of a casting in steel saved material and machining cost.

AUTOMATIC LATHE—Jones & Lamson Machine Co., Springfield, Vt., has issued a bulletin showing production of transmission sliding gears on automatic lathes. Illustrations show tooling in closeup view. Method of producing at a rapid rate is described.

STEEL CABINETS—Flexibility in interior arrangement by use of its various types of steel cabinets is suggested by an insert for its loose-leaf catalog issued by the Durabilt Steel Locker Co., Aurora, Ill. Illustrations show how they may be used.

AIR PREHEATER—Combustion Engineering Corp., New York, has issued a catalog on its air preheater for supplying air for combustion. Development of use of preheated air in power stations indicates a trend to its general use. Diagrams show construction and operation.

NICKEL—A bulletin by the International Nickel Co., New York, indicates what may be done to insure dependable properties in gray iron castings by the use of nickel alloy. An actual instance is used to support the claims of quality improvement.

ELECTRIC FURNACE TERMINAL MOUNTINGS—First of a new series of bulletins is being distributed by the Globar Corp., Niagara Falls, N. Y. It covers terminal mountings for electric furnaces. The bulletin is illustrated by cross section diagrams and tables of specifications.

INSULATION—General Insulating & Mfg. Co., Alexandria, Ind., has issued a bulletin on its high temperature insulating material. This is made from a silica rock mined near its plant. Illustrations show forms into which it is fabricated and uses to which it is put in resisting heat or conserving losses. A number of installations are shown in halftone.

DRY BLAST—Silica Gel Corp., Baltimore, has reprinted a paper covering the use of its material for drying blast in an English plant. Full engineering details are given. The company is also distributing a pamphlet written in non-technical style, describing the material and its uses in industry.

AUTOMATIC PUMPING—Automatic control of pumping installations is illustrated in a bulletin by the Electric Controller & Mfg. Co., Cleveland. With motor-driven pumps such control is always effective and operates without attention when need arises, even after intervals of idleness.

RECORDING INSTRUMENTS—Value of recording instruments to provide graphic proof of tests, which can be reviewed by a second person, is the theme of a bulletin by the Esterline-Angus Co., Indianapolis. Lessening the human factor and a continuous record of performance are further advantages claimed for this form of recorder.

AIR COMPRESSORS—The sixth edition of its book indicating uses of air compressors and tools is being issued by the Ingersoll-Rand Co., New York. This publication is in two colors, 140 pages, and has been translated into several foreign languages. Its title is "100 and 1 Ways To Save Money." It is largely illustrated by halftones to indicate the wide variety of uses to which compressed air equipment can be applied.

SEAMLESS STEEL PIPE—Otto Kafka, Houston, Tex., has issued a looseleaf catalog and handbook on his type of seamless slipjoint steel pipe. It contains data as to manufacture, dimensions, method of welding joints and of laying. Illustrations show how difficult lines have been laid.

BOILER DOOR LATCH—Bass Foundry & Machine Co., Fort Wayne, Ind., is circulating a bulletin on its automatic safety fire door latch for use on steam boilers and an access door for boilers settings. These pieces of equipment are approved by boiler inspection offcials of states requiring their use.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized. Extra 5 per cent granted in the 4th quarter 1927 and 1st quarter 1928 discontinued April 2, 1928.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 3-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 and 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 5 on black and 1½ and 5 on galvanized.)

Boiler Tubes

Pittsburgh carload discounts. Less carloads 4 points less

STEEL (Lap Weld)

2 and 2¼-inch	27 off
2½ and 2¾-inch	37 off
3-inch	40 off
3¼ to 3¾-inch	42½ off
4 to 13-inch	46 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON

1½-inch	+18
1¾-inch	+ 8
2 and 2¼-inch	2 off
2½ to 3-inch	7 off
3¼ to 4½-inch	9 off

(Note—Additional discounts of one 10 to two 10's and one 5 now being given.)

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier

GAGE

Plates not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds per square foot .20c

Plates over 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot, .20c

Plates ordered 7.65 pounds per square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B.	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charles for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extra

Under 5 feet to 3 feet inclusive....	.10c
Under 3 feet to 2 feet inclusive.....	.25c
Under 2 feet to 1 foot inclusive.....	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive....	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c